IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

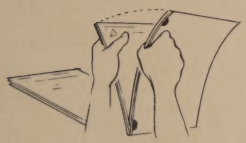
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 515 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JAN. 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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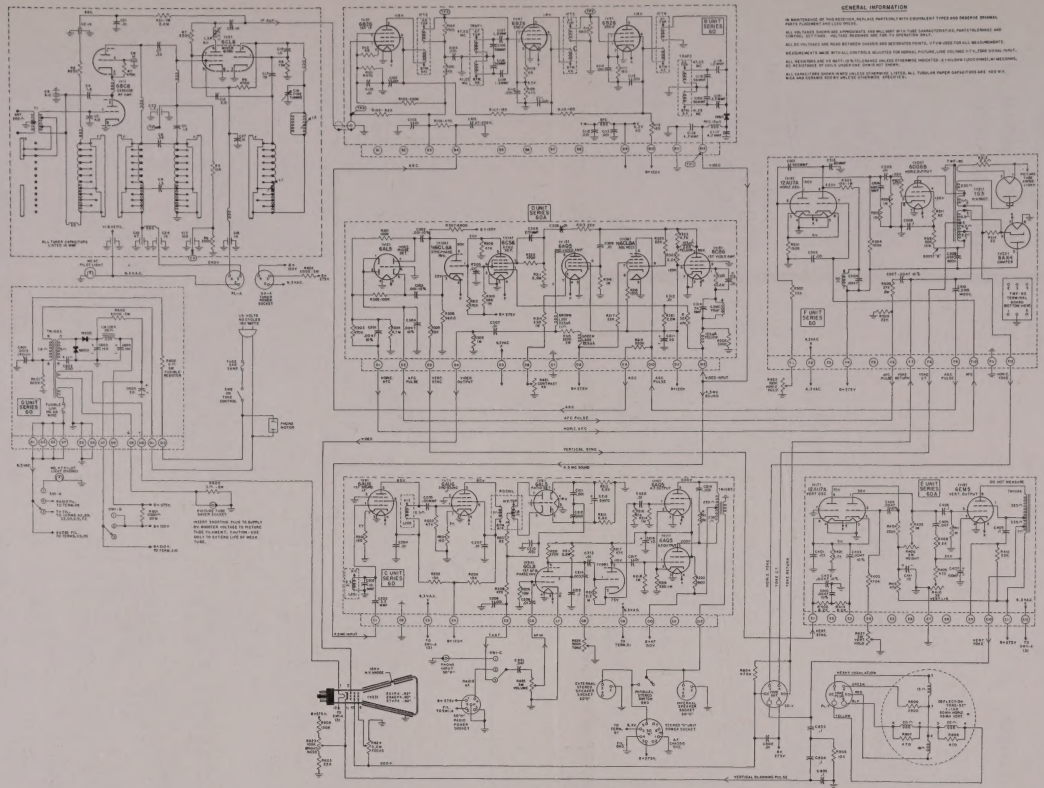
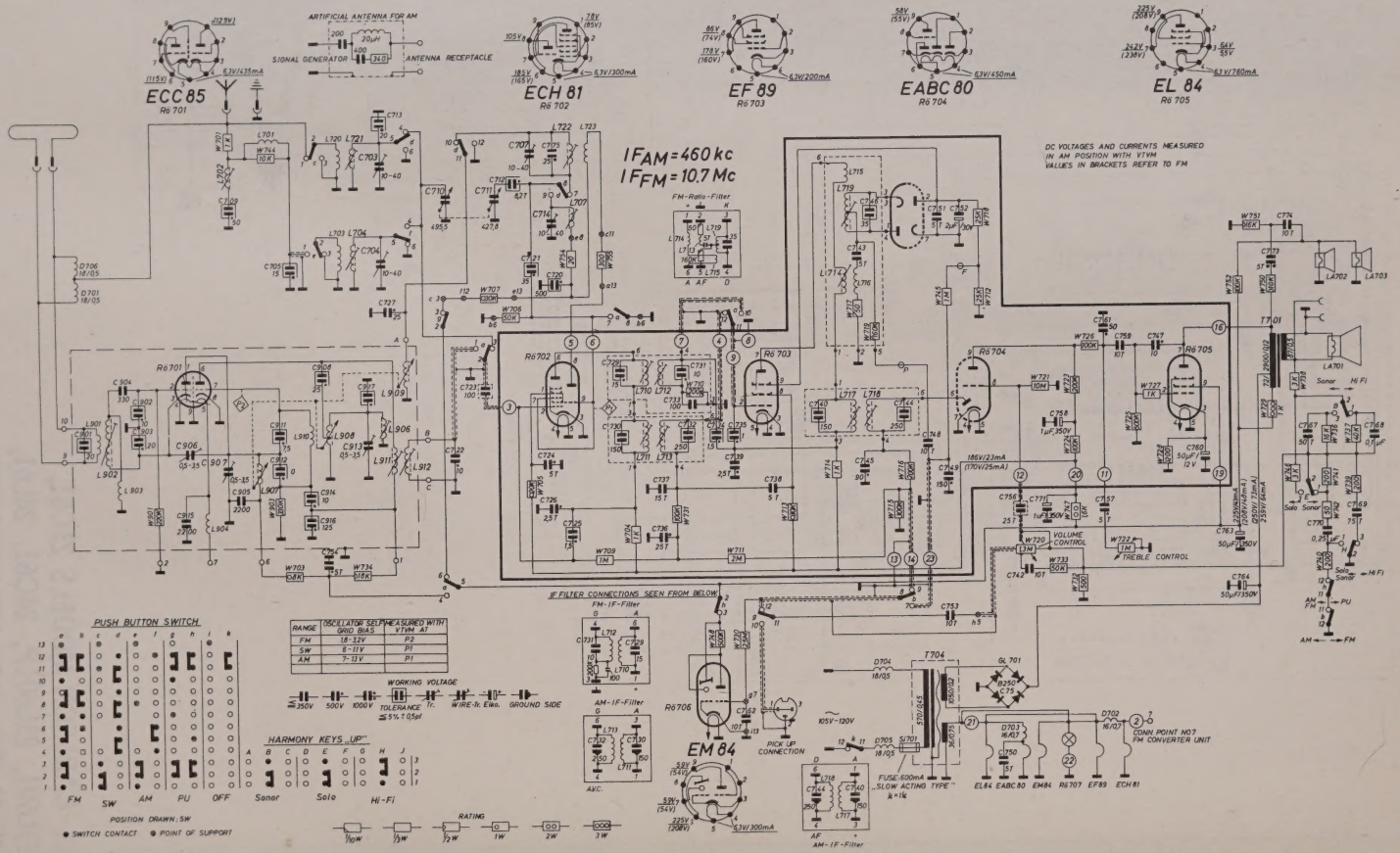


SETCHELL-CARLSON MODELS 23C61,
23L61, 23L601, 23L601P, 24C61, 24L61,
27C61, 27L61 (CH. 159 LATE VERSION)

This Chassis Similar To Set Covered In PHOTOFACT Folder 2 In Set 445 Schematic Diagram Courtesy of Setchell-Carlson Inc.

BLAUPUNKT MODEL VERONA 2608



Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company

PHOTOFACT® Folder

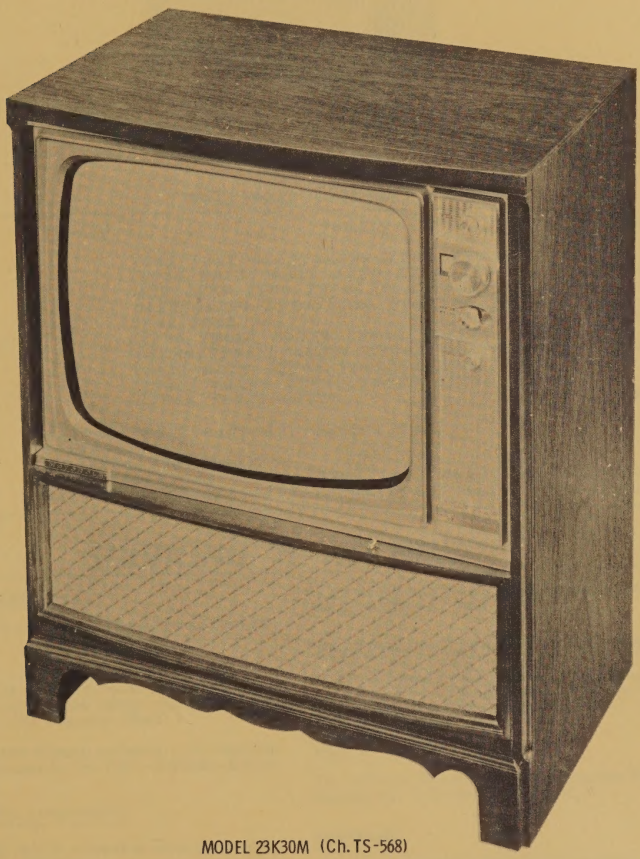
MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y



MODEL 23K30M (Ch. TS-568)

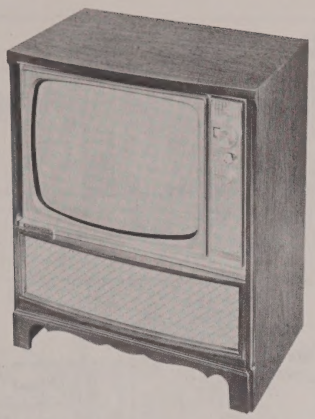
MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y

MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y



MODEL 23K30M (Ch. TS-568)

TRADE NAME	MOTOROLA MODELS	CHASSIS
	23C6B, 23C6M, 23C7CW, 23K30B, 23K30M, 23K31CW, 23K32M, 23K32W, 23K33B, 23K33M, 23K33W, 23K34CW	TS-568
	23C4B, 23C4M, 23C4W, 23C5CW, 23K28B, 23K28M, 23K28W, 23K29B, 23K29M, 23K29W, 23T2B, 23T2BZ, 23T2CH, 23T2M, 23T2W	RTS-568
	Y23C6B, Y23C6M, Y23C7CW, Y23K30B, Y23K30M, Y23K31CW, Y23K32M, Y23K32W, Y23K33B, Y23K33M, Y23K33W, Y23K34CW ..	TS-568Y
	Y23C4B, Y23C4M, Y23C4W, Y23C5CW, Y23K28B, Y23K28M, Y23K28W, Y23K29B, Y23K29M, Y23K29W, Y23T2B, Y23T2BZ, Y23T2CH, Y23T2M, Y23T2W	RTS-568Y

MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Eighteen, UHF - Nineteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 195 Watts, 1.75 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE

A 5 amp. line fuse is used for receiver protection and a .5 amp. S/B fuse is used for low voltage supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View - Capacitor & Misc. Ident.")

TUNER OSCILLATOR ADJUSTMENT

The VHF Oscillator may be adjusted by removing the Control Panel supporting VHF Tuner.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

The focus may be varied by connecting the lead from pin 6 of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size Control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

SYNC STABILITY

Sync stability may be varied by means of a Noise Gate Control. (For location, see "Tube Placement Chart".)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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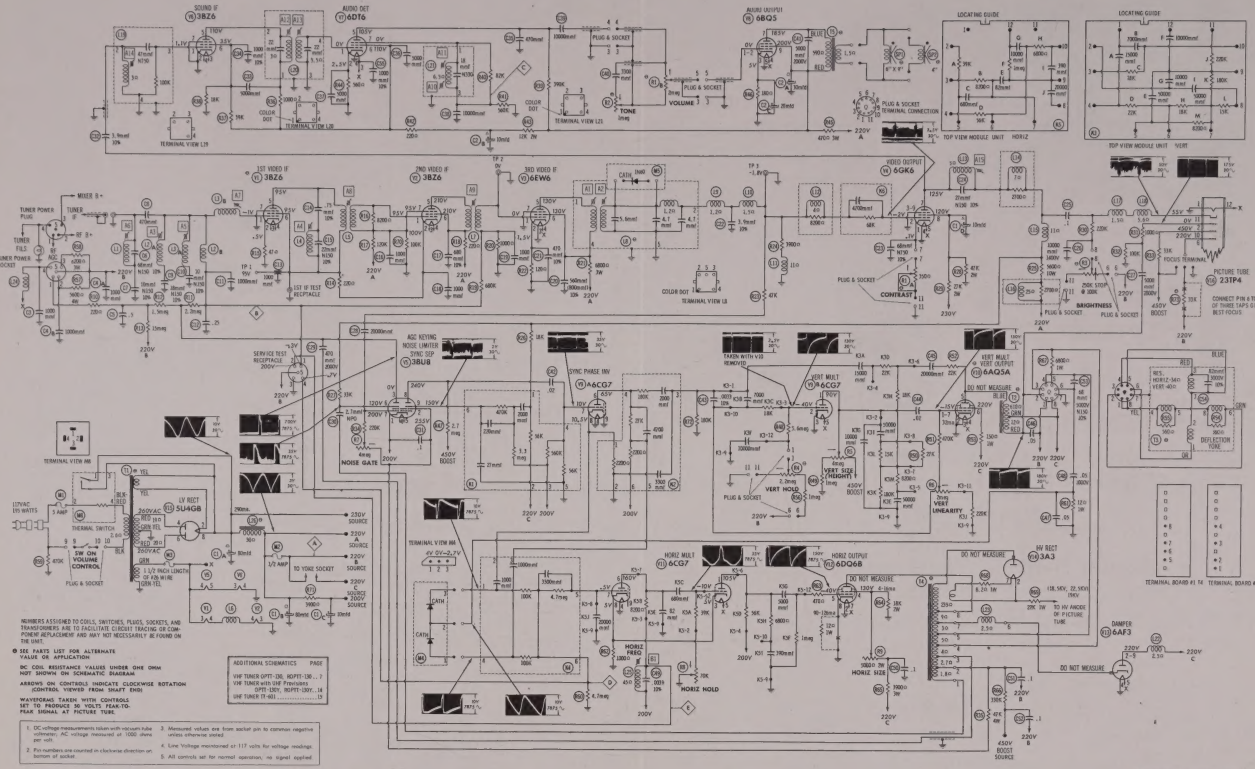
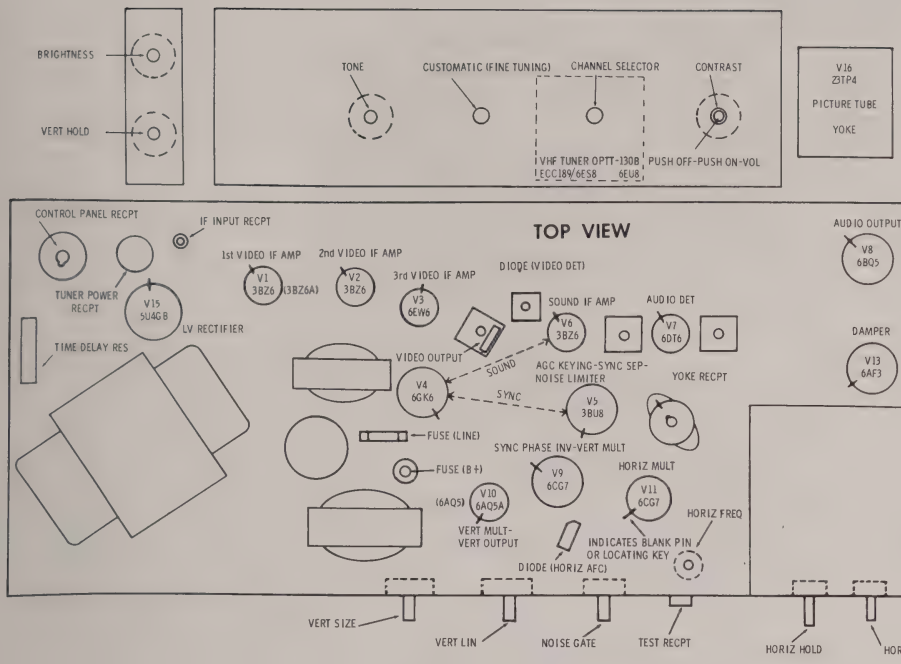
SET 515 FOLDER 1


SOUND IF
AUDIO DET
AUDIO OUTPUT
LOCATING GUIDE
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
MIXER B+
TUNER POWER PLUG
TUNER POWER SOCKET
TUNER
TUNER FILS
1ST IF TEST RECEPTACLE
SERVICE TEST RECEPTACLE
AGC KEYING NOISE LIMITER SYNC SEP
SYNC PHASE INV
TAKEN WITH VII REMOVED
VERT MULT
VERT OUTPUT
VERT SIZE
VERT HOLD
VERT LINEARITY
HORIZ MULT
HORIZ OUTPUT
HORIZ FREQ
HORIZ HOLD
HORIZ SIZE
HV RECT
DAMPER
PICTURE TUBE
CONNECT PIN 4 TO ONE OF THREE TAPS GIVING BEST FOCUS
BRIGHTNESS
CONTRAST
FOCUS TERMINAL
PLUG & SOCKET
TERMINAL VIEW I2R
TERMINAL VIEW I2S
TERMINAL VIEW I3B
TERMINAL VIEW I4A
TERMINAL VIEW I4B
TERMINAL VIEW I5
TERMINAL VIEW I6
TERMINAL VIEW I8
TERMINAL BOARD #1 T4
TERMINAL BOARD #2 T4
LV RECT
SW ON VOLUME CONTROL
THERMAL SWITCH
TO YOKE SOCKET
NOISE GATE
DO NOT MEASURE
TO HV ANODE OF PICTURE TUBE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATICS PAGE
VHF TUNER OPTT-130, HOPTT-130 ... 7
VHF TUNER with UHF Provisions (OPTT-120Y, HOPTT-120Y ... 16
UHF TUNER TT-601 ... 15
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1961
MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), V15, Fuse (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9, V10
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V9
No horiz. sync V5, V9
No vert. or horiz. sync V5, V9

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Remove the yoke plug to eliminate interference from the Horizontal Sweep Circuit. Connect a 1500 ohm 50 watt resistor from point Ⓐ to chassis. Disable the Tuner Oscillator by grounding the grid (Pin 2) of the Oscillator. Set the Noise Gate control fully counterclockwise. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 4.5 volt bias supply to point Ⓑ. Positive to chassis.
Maintain between 2 and 3 volts peak to peak on scope except where otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to TP2. Low side to chassis.	44.0MC (10MC Swp.)	45.75MC	13	Vert. Amp. thru 47K to TP3. Low side to chassis. (Across Video Det. load.)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	"	47.25MC	"	"	A3, A4	Increase scope gain. Remove bias if necessary. Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil away from chassis.
3.	"	"	41.25MC	"	"	A5	Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil nearest chassis.
4.	"	"	39.75MC	"	"	A6	Adjust to place marker in trap notch as in Fig. 2. Tune slug at end of coil away from chassis.
5.	"	"	41.25MC 42.25MC 44.0MC 45.75MC 47.25MC	"	Vert. Amp. to TP1. Low side to chassis.	Mixer Plate Coil & A7	Set generator for 3 volts peak to peak. Restore 4.5 volts bias. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. The Mixer Plate Coil affects the center peak and A7 affects the two outside peaks. Tune slugs at end of coil away from chassis. If a suckout (trap effect) occurs, detune A8 to remove.
6.	"	"	42.25MC 45.75MC	"	Vert. Amp. thru 47K to TP3. Low side to chassis.	A8, A9	Adjust A8 to place 42.25MC marker at 50% or curve as in Fig. 4. Adjust A9 to place 45.75MC marker at 50% on other side. Tune slugs to end of coils nearest chassis. If necessary, retouch Mixer Plate Coil to correct tilt. Retouch A8 and A9 for correct response.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust all controls for normal picture and sound. Connect the DC probe of the VTVM to point Ⓒ. Common to chassis. Adjust A10 for maximum deflection choosing the one of two peaks that produce the highest voltage. While listening to the sound, retouch A10 for maximum sound and MINIMUM distortion. The top slug (A11) is a preset slug which is set near the top of the coil form and left there.
Change to a very weak signal (this may be done by loosely coupling the antenna lead to the antenna terminals) that produces a hiss in the sound. Adjust A12 and A13 for maximum sound and MINIMUM distortion. Adjust A14 for maximum undistorted sound. If sound is not clear at this time, repeat the above procedure as necessary.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and turn the Contrast fully clockwise. Adjust the Fine Tuning until a strong 4.5MC beat pattern is visible. Adjust A15 to find the two points at which the beat pattern is just visible on the screen. Tune the slug to the center of these two points. (Use the MINIMUM amount of inductance that will result in no apparent beat pattern.)

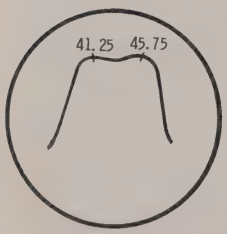


FIG.1

FIG.2

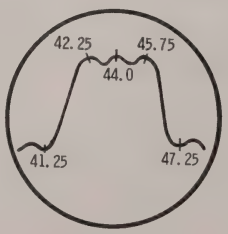


FIG.3

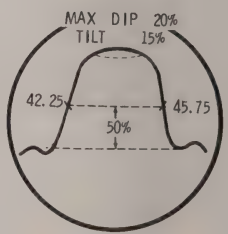
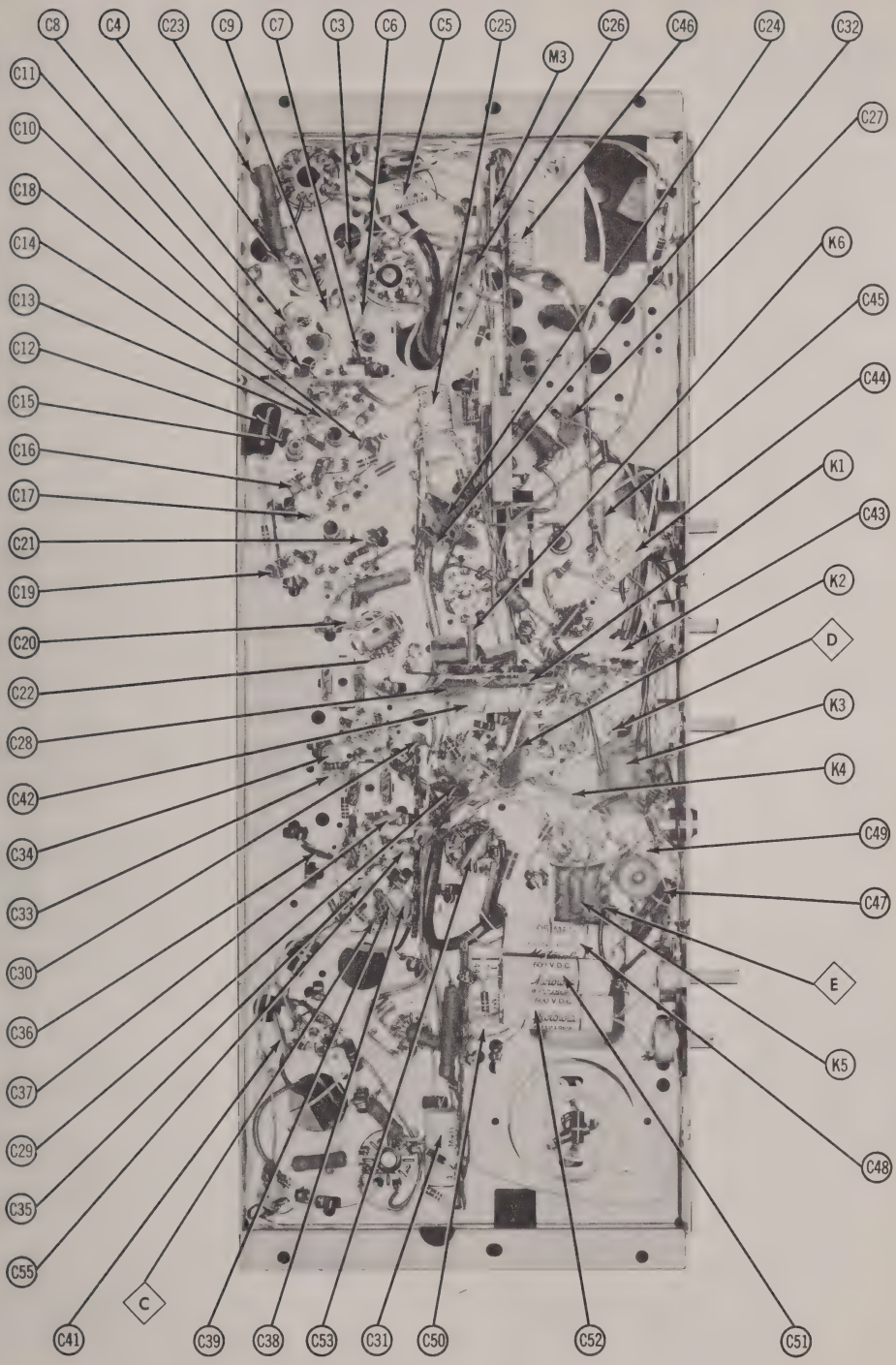


FIG. 4



CHASSIS BOTTOM VIEW - CAPACITOR, MISC., & ALIGN. IDENT.

SET 515 FOLDER 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Remove the deflection yoke plug to prevent interference radiation. Connect a 1500Ω 50 watt resistor from pin 3 to pin 5 of the Service Test Receptacle.
DO NOT remove the tuner cover.
Suggested Alignment Tools: A206, A207 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A208 thru A213... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point Ⓣ to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Preset A206 and A207 so top of screw is .35" above tuner chassis.
Use 10MC sweep unless otherwise noted.

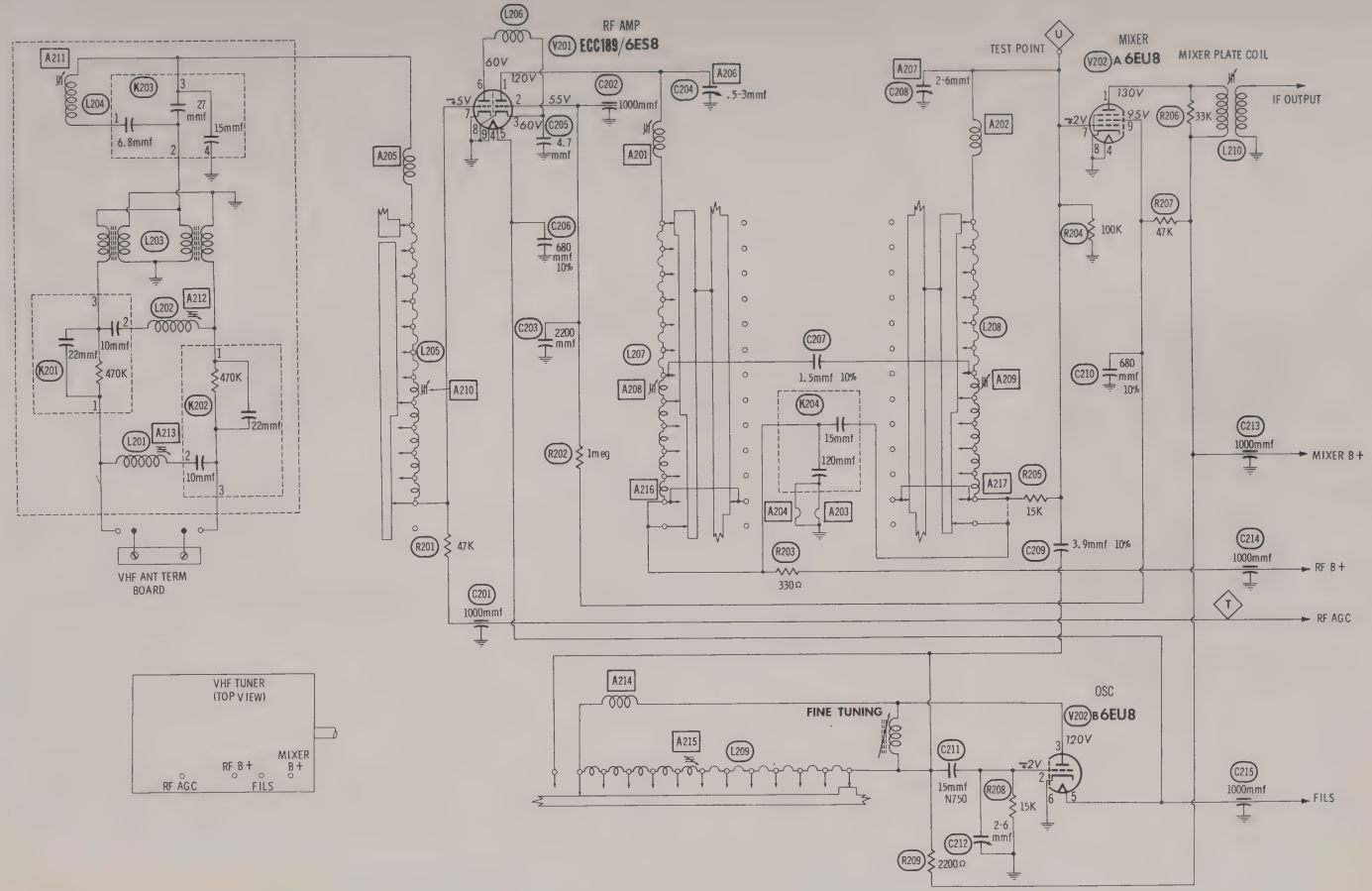
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A201, A202	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	"	"	"	"	A203, A204	Adjust for proper bandwidth as in Fig. 201.
3.	"	"	"	"	"	"	A205	Adjust for maximum amplitude and MINIMUM tilt.
4.	"	"	177MC	175.25MC 179.75MC	7	"	A206, A207	Adjust A206 for proper marker position. Adjust A207 for MINIMUM tilt.
5.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209, A210	Adjust A208 to place 83.25MC marker on or near peak, A209 to place 87.75MC marker on or near other peak and A210 for maximum gain and MINIMUM tilt.
6.	"	"	"	94MC	"	"	A211	Adjust for MINIMUM response at marker or until it just starts to affect the high frequency side of response curve. NOTE : A211 may be adjusted to trap out interference between 85 and 108MC. However, make certain that no part of a desired channel is trapped out.
7.	"	"	79MC	77.25MC 81.75MC	5	"		Check for response similar to Fig. 201. If necessary make compromise adjustment of A208, A209 and A210 for proper curve on each channel.
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			
8.	"	"	57MC	43.5MC 45.5MC	2	"	A212, A213	Adjust A212 for MINIMUM response at 43.5MC marker and A213 for MINIMUM response at 45.5MC marker. Retouch either or both for flat response consistent with MINIMUM amplitude at trap frequencies.

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	215.75MC	13	Vert. Amp. thru 47K across Video Det. load	A214	Adjust to place marker in trap notch as in Fig. 202.
10.	"	"	207MC	209.75MC	12	"		Marker must fall into trap notch on each channel within plus or minus 750KC of specified marker frequency. If not, make compromise adjustment of A214 for all high band channels.
			201MC	203.75MC	11			
			195MC	197.75MC	10			
			189MC	191.75MC	9			
			183MC	185.75MC	8			
			177MC	179.75MC	7			
11.	"	"	85MC	87.75MC	6	"	A215	Adjust to place marker in trap notch as in Fig. 202.
12.	"	"	79MC	81.75MC	5	"		Marker must fall into trap notch on each channel within plus or minus 750KC of specified marker frequency. If not, make compromise adjustment of A215 for all low band channels.
			69MC	71.75MC	4			
			63MC	65.75MC	3			
			57MC	59.75MC	2			

CONTINUED ON PAGE 15



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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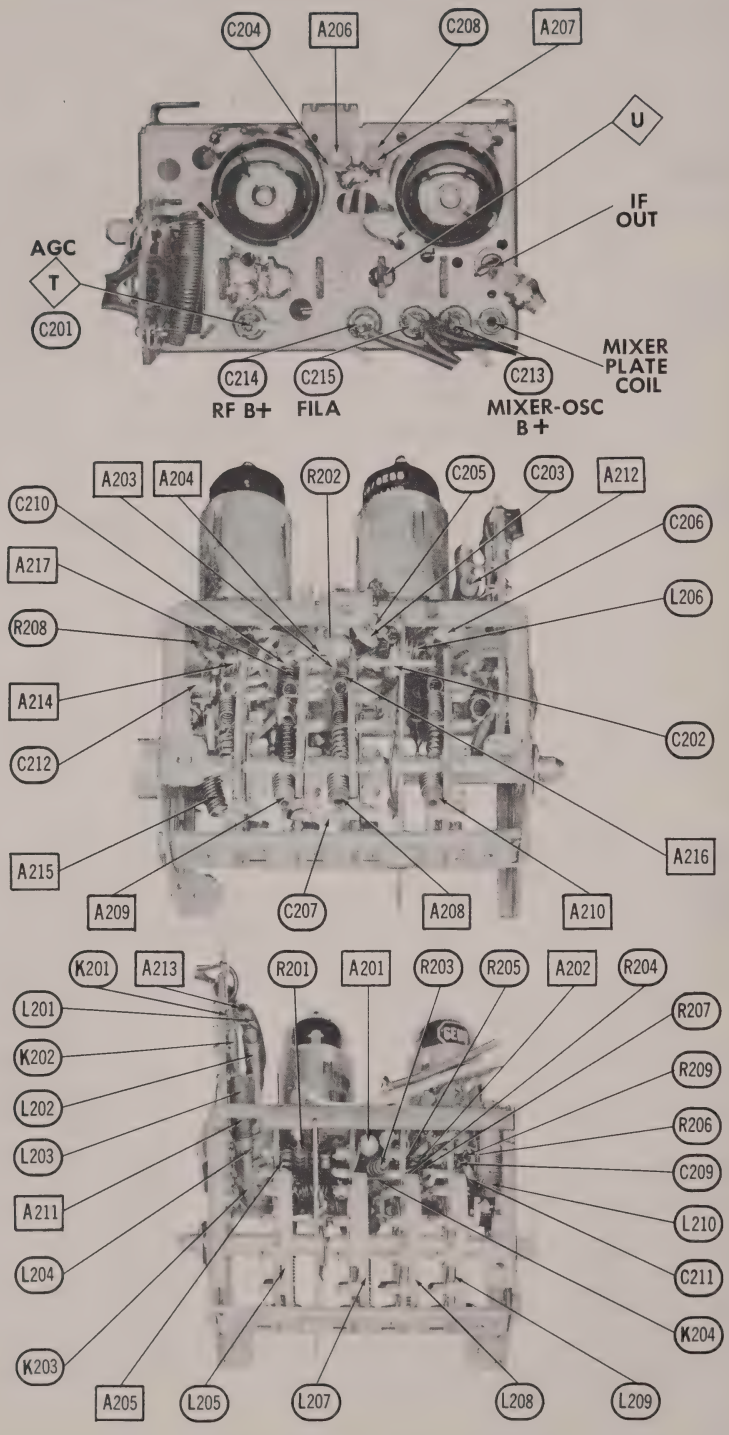
VHF TUNER OPTT-130, ROPTT-130

MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y



VHF TUNER OPTT-130

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	1st Video IF Amp.	3BZ6 (3BZ6A) *
V2	2nd Video IF Amp.	3BZ6
V3	3rd Video IF Amp.	6EW6
V4	Video Output	6GK6
V5	AGC Keying - Sync Sep. - Noise Limiter	3BU8
V6	Sound IF Amp.	3BZ6
V7	Audio Detector	6DT6
V8	Audio Output	6BQ5
V9	Sync Phase Inverter - Vert. Mult.	6CG7
V10	Vert. Mult. - Vert. Output	6AQ5A (6AQ5) *
V11	Horiz. Mult.	6CG7
V12	Horiz. Output	6DQ6B
V13	Damper	6AF3
V14	HV Rectifier	3A3
V15	LV Rectifier	5U4GB

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	23TP4					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	350	23K754011	AFHS4-56-94.4	D0040	FP450	TMQ-4301	TVL-4783	
B	■80	300			BR8035	TC80	TD-80-350	TVA-1716	
C	10	300							
D	▲10	300							
C2A	■30	300	23K738750	AFH3-108	C0810	WP326.63	TMT-3334	TVL-3635.5	
B	▲10	300							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4A	1000				BPD-2X001	DD3-102	BYD6DD1	CCD-102	B2X210	5HK-2D10
B	1000							CCD-102		
C5	.5	100V			P288N-5		CUB2P5	1DP-4-504	GEM-205	2TM-P50
C6	68	N150	10%	Pt. #2IR131238				*		10TCP-Q68
C7	10	N150	10%	Pt. #2IR125698				*		10TCP-Q10
C8	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C9	18	N150	10%	Pt. #2IR120578				*		10TCP-Q18
C10	10	N150	10%	Pt. #2IR125698				*		10TCP-Q10
C11	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	.25	50V			P288N-25		CUB2P25	1DP-3-254	GEM-2025	2TM-P25
C13	1000				EF-001	MFT-1000		CCF-102	CT280A	
C14	.75		10%	Pt. #2IK735623						
C15	22	N150	10%	Pt. #2IR120539				*		10TCP-Q22
C16	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	680		10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C18	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	560		10%	(800) †	DI-560	DD-561	5R5T56	CCD-561	GP356	10TS-T56
C21	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C22	3.9		10%				C10V4C			10TCC-V39
C23	68	N750	10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CNO-468	10TCU-Q68
C24	27	N150	10%	Pt. #2IR119896				*		10TCP-Q27
C25	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C26	10000	1400V			DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C27	5000	2000V				DD30-502	HVC20D5	3CCD-502	2HV-247	20HK-D5
C28	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	470	2000V			HVD-30-470	DD30-471	HVB20T47	3CCD-471	2HV-347	20HK-T47
C30	2.7	NPO ±.25mmf					C10V3C			10TCC-V27
C31	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C32	3.9		10%				C10V4C			10TCC-V39
C33	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C34	1000		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C35	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C36	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C37	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C41	5000	2000V				DD30-502	HVC20D5	3CCD-502	2HV-247	20HK-D5
C42	.02	600V			P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C43	.0033	400V	10%		V84C4D33-10%		PM6D33	6DP-1-332	GEM-16233	6TM-D33
C44	.02	600V			P688N-02	DD-203	CUB6S2	6DP-2-223	GEM-612	6TM-S20
C45	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C46	.05	400V			P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C47	.05	200V			P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C48	.05	1000V			P1088N-05		CUB10S5	16DP-5-503	GEM-1015	10TM-S50
C49	.0039	400V	10%		P684CM-0039		DPMS6D39	6DP-1-392	JL-239	6PS-D39
C50	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C51	.1	600V			P688N-1	DF-104	CUB6P1	6DP-3-104	GEM-601	6TM-P10
C52	.1	600V			P688N-1	DF-104	CUB6P1	6DP-3-104	GEM-601	6TM-P10

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: ARROVOX Part No.	CENTRALAB Part No.	CORNELL DUBILIER Part No.	ELMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.
C52	68 5000V NPO 10%	Pt. #23X13648						
C54	82 5000V 10%	Pt. #23X13650						
C55	1000 10%		DI-1000	DD-102	SR5DH	CCD-102	3DY-482 GPB0	10TS-D10

† Alternate Value
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: MOTOROLA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS—IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	350Ω	½	1BD6008A03	F1-0			◆U14U43-S	Contrast Note 1
B	3 mag			RPS-58			*	Volume Note 1
C	Switch			Not Reg.				Push-Push Off-On
R2A	1meg	½	1BD6063A03	B-70	A47-1meg-S	GS3-1ST	U53	Tone Note 2
B	Shaft			Not Reg.	RS-3	Not Reg.	Not Reg.	
R3A	250K	½	1BD6318A08			TA64	TA164L	Brightness Note 4
B	100K Stop					BL1-338	*	
C	Shaft						Not Reg.	
R4A	250K	½	1BD6318A08			TA64	TA164L	Brightness Note 4
B	100K Stop					BL1-338	*	
C	Shaft						Not Reg.	
R4A	2 meg	½	1BD6318A06			TA64	TA36L	Vert. Hold Note 3
B	Shaft					BL1-329	*	
C	2meg	½	1BD6318A06			TA64	TA36L	Vert. Hold Note 4
B	Shaft					BL1-329	*	
R5	4meg	½	1BD6353A	TT-88	B47-5meg-S	TA64	Not Reg.	
R6A	5meg	½	1BD6353A	TT-75	B47-5meg-S	BL1-329	PT45L	Vert. Size (Height)
B	Shaft			Not Reg.	Not Reg.	TA64	Not Reg.	Vert. Linearity
R7A	4meg	½	1BD6049A	TT-88	B47-4meg-S	BL1-340	PT45L	
B	Shaft			Not Reg.	Not Reg.	TA64	Not Reg.	Noise Gate
R8A	75K	½	1BD6623A	TT-38	B47-100K-S	BL1-326	PT45L	Horiz. Hold
B	Shaft			Not Reg.	Not Reg.	TA64	Not Reg.	
R9A	5000Ω	2(WW)	1TK7S4149	WW-502	A43-5000	WI1-104	PT1-5K	Horiz. Size
B	Shaft			Not Reg.	F1K1-4/4	SI1S	Not Reg.	

◆ "STA-LOC" Equivalent: FA351L, RUP25A, CS1000A.
* Use 100K Resistor in series with left hand terminal, viewed shaft end terminals down.
Note 1: Chassis RTS-568 uses Part #1D6G02A06
Note 2: Chassis RTS-568 uses Part #1D6T5419D
Note 3: Used in Chassis TS-568. Some versions may use Part #1D6S52A05 for (R3).
Note 4: Used in Chassis RTS-568.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC Part No.	WORKMAN TV Part No.	REMARKS
R10	220Ω			
R11	2.2meg			
R12	1.5meg			
R13	15meg			
R14	220Ω			
R15	470			
R16	6200Ω			
R17	180K			
R18	220Ω			
R19	680K			
R20	100Ω			
R21	68000 3W	PW5-68000		
R22	1300	-		
R23	47K			
R24	39000			
R25	56000 10W	PW10-56000	10W-SQ-56000	
R26	18K		*	
R27	33K			
R28	47K 2W			
R29	27K 2W			
R30	220K			
R31	100Ω			
R32	100K			
R33	33K			
R34	220K			
R35	47K 4W	PW5-47000		
R36	1000Ω			
R37	39K			
R38	18K			
R39	150K			
R40	82K			
R41	680K			

ITEM No.	RATING	REPLACEMENT DATA: IRC Part No.	WORKMAN TV Part No.	REMARKS
R42	220Ω			
R43	12K 2W			
R44	560Ω			
R45	470Ω 3W	PW5-4700		
R46	180Ω			
R47	2.7meg			
R48	5.6meg			
R49	1meg			
R50	27K			
R51	470K			
R52	33K			
R53	150Ω 1W			
R54	560Ω			
R55	5600			
R56	1meg			
R57	56000 4W	PW5-56000		
R58	82000 2W	PW5-82000		
R59	470K			
R60	4.7meg			
R61	1.5Ω 1W			
R62	10000			
R63	470Ω			
R64	18K 2W			
R65	39000 * 3W	PW5-39000		
R66	330K			
R67	6800Ω 1W			
R68	8.2Ω 1W			
R69	22K 1W			
R70	100K			
R71	3900Ω			
R72	180K			
R73	33K ▲			

4700Ω 3W) used in some versions (Pt. #1TK7S4179).
* May not be used in some versions

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Miller Part No.	Stancor Part No.	NOTES
L1	39.75MC Trap	24K7S4048	TV-153	6235	RTC-8556	① Includes Complete Assembly.
L2A	47.25MC Trap	24K7S4050	-	-	-	② Pt. Part #CLA.
B	Trap Coil					③ Includes 820Ω Resistor
L3A	41.25MC Trap	24K7S4586				④ Includes 2700Ω Resistor
B	1st Video IF					
L4	47.25MC Trap	24K7S4585	TV-155 ▲	6235 ▲	RTC-8556 ▲	▲ Disregard Tap
L5	2nd Video IF	24K7S7587	TV-120	6229	RTC-8626	* Parallel with 820Ω Resistor
L6	Fil. Choke (1.5uh)	24K7S2035	BC-563	4504	RTC-8518	▲ Parallel with 2700Ω Resistor
L7	3rd Video IF	24K7S1266	TV-130	6216	RTC-8551	
L8A	4th Video IF	24K7S7732 ①				
B	Resonant (8.5uh)	24K1H469				

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Meller Part No.	Stancor Part No.	NOTES
L9	RF Choke (1.8uh)	24K7S6772 ②	BC-562	9310-18	RTC-8518	
L10	Resonant (8.5uh)	24K1H469				
L11	Peaking (300uh)	24K7S4508	TV-303	6176	RTC-8592	
L12	Peaking (100uh)	24K7S4230 ③	TV-154 *	6112 *	RTC-8576 *	
L13	4.5MC Trap	24K7S3290	TV-151 ▲	1459 ▲	RTC-8603 ▲	
L14	Peaking (240uh)	24K7S2963 ④	TV-155 ▲	6181 ▲	RTC-8598 ▲	
L15	Peaking (560uh)	24K7S4509	TV-203	6174	RTC-8592	
L16	Peaking (1400uh)	24K7S4668 ⑤	BC-514 ▲	4064 ▲	RTC-8533 ▲	
L17	Resonant (8.5uh)	24K1H469				
L18	Peaking (100uh)	24K7S4674	TV-194	6113	RTC-8574	
L19	1st sound IF	24K7S4053	TV-154	6170-A	RTC-8604	
L20	2nd Sound IF	24K7S4051	TV-113	6303	RTC-8545	
L21	Quadrature	24K7S4492	TV-134	1481	RTC-8606	
L22	RF Choke (7.5uh)	24K7S4171	BC-565	4511	RTC-8518	
L23	RF Choke (7.5uh)	24K7S4171	BC-565	4511	RTC-8518	
L24	Fil. Choke	24K7S4731	BC-582	4504	RTC-8516	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Miller Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Tried Part No.
L25	Horiz. Stabilizer	24K7S4346	TV-153	6235	RC110	RTC-8632	88-5	WLC-25

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (+)	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Tried Part No.	NOTES
L26	.265A	30Ω	.93 Hy.	25K7S7553AY ①	C-3998	C-3343	36C93	C-37X	① Alternate Part #25K7S7175J

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	SEC 1	SEC 2	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Tried Part No.	NOTES
T1	117V @ 1.75A	620VCT @ 200A DC	5V @ 3A	25K7S3869M ①					① Alternate Part #25K7S2869
	SEC 3	SEC 4	SEC 5						
	6.3V @ 9A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Tried Part No.	NOTES
T2	Vert. Output	25K7S4976-AN	A-2855		VO-108	26S73	A-133X	
	Alt. Vert. Output	25K7S4974						
T3	Yoke (Horiz. 34MH) 80° (Vert. 39MH)	24K7S4785-AD ④ ⑤	MDF-97 ④ ⑤		DY-32A	Y-45 ④ Y-45-1 ⑤	Y-45-2	
	Alt. Yoke	24K7S3765 ①						
	Rear Cover and Centering Device, Yoke Clamp	59C72E45						
T4	Horiz. Output	42A7S5175					D-173 *	
	Alt. Horiz. Output	24K7S4272-Z						
	Primary Coil	24K7S4272						
	Secondary Coil	24K7S4508						

① Includes Plug and Leads.
② Use original Plug; Rear Cover and Centering Device; Core Clamp Assembly. Connect same as original.
③ Remove Jumper from Yoke Terminals #1 and #4.
④ Remove Jumper from Yoke Terminals #2 and #6.
⑤ Remove Horizontal Damping Capacitor from Yoke Terminals #1 and #2. Install across Yoke Terminals #3 and #7.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
8					8
7					6
5					4
4					3
2					2
1					1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: MOTOROLA Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Tried Part No.	NOTES
T5	5100Ω	8-8Ω	25K7S9230-Y ①	A-2901	A-3257	24S07	S-53X	① Alternate Pt. #25K7S9230

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: MOTOROLA Part No.	QUAM Part No.	NOTES
SP1	6" x 9"	PM	8-8Ω	50K7S4101 ①	6A3Z8	① Used in Models 23K30B, M, Y23K30V, M, 23K31CW, Y23K31CW
SP2	4"	PM	8-8Ω	50K7S4100 ①	4A07Z8	
	5 1/4"	PM	8-8Ω	50K7S7782 ②	5A13Z28.4	② Used in Models 24T23B, B2, C3B, M, W, Y23T13B, B2, C3B, M, W, Y23C4B, M, W, Y23C4B, M, W, 23C8CW, Y23C8CW
	3" x 5"	PM	8-8Ω	50C7S2937 ③	3A40Z8	
	5" x 9"	PM	8-8Ω	50D6055A04 ④	6A22Z8	③ Used in Models 23C8B, M, Y23C8B, M, 23C7CW, Y23C7CW
	6" x 9"	PM	8-8Ω	50D6055A06 ⑤		
	4"	PM	8-8Ω	50D6507A01 ⑥		④ Used in Models 23K28B, M, W, Y23K28B, M, W, 23K29B, M, W, Y23K29B, M, W
						⑤ Used in Models 23K33M, W, Y23K33M, W
						⑥ Used in Models 23K33B, M, W, Y23K33B, M, W, 23K34CW, Y23K34CW

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA Part No.	REPLACEMENT DATA
K1	Sync Sep. Grid	27mmf, 220mmf, 2000mmf, 5K, 56K, 470K, 560K, 3.3meg	51B7476S	Centralab PC-358 Sprague 8N-5
K2	Vert. Integrator	3000mmf, 3300mmf, 4700mmf, 5200Ω, 2250Ω, 27K, 180K	51B7477S	Centralab PC-355 Sprague VY-3
K3	Vert. Sweep	7000mmf, 10000mmf, 10000mmf, 15000mmf, 50000mmf, 50000mmf, 820Ω, 1K, 18K, 18K, 22K, 180K, 220K	51K7S367S	
K4	Horiz. AFC	1000mmf, 1000mmf, 3300mmf, 100K, 100K, 4.7meg	51B7475S1	Centralab PC-357 Sprague F-4
K5	Horiz. Sweep	82mmf, 390mmf, 680mmf, 5000mmf, 20000mmf, 6800Ω, 10000Ω, 39K, 56K, 1meg	51K7S380S	
K6	Video Output Grid	4700mmf, 68K	51K7S497S	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: MOTOROLA Part No. FUSE	HOLDER	LITTELFUSE Part No. FUSE	HOLDER	BUSS Part No. FUSE	HOLDER
M1	3AG	5A 250V	6SA743612	51Z7374S6	312005 (3AG SA 250V)	357001	MTH-5	4405
M2	N	1A 250V S/B)	6SK7S1794	9K7S0575	358.500 1N 1A 250V S/B)	346009	MJ	HN 3/10 to ½
M3	1½" length #26 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: MOTOROLA Part No.	GENERAL ELECTRIC Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
M4	*	48K7S4153	8GD1	1N80	1N80	* Dual Diode (Series Connected)
M5	1N60	48K7S4548				Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA Part No.	NOTES
M6	Tuner	1U8502BA13	VHF (OPTT-13O), Chassis TS-568
	Tuner	1U8502BA16	VHF with UHF Provisions (OPTT-13OY), Chassis TS-568Y
	Tuner	1U8502BA23	VHF (ROPTT-13O), Chassis RTS-568
	Tuner	1U8502BA33	VHF with UHF Provisions (ROPTT-13OY), Chassis RTS-568Y
	Tuner	77D6S343A01	UHF (TT-60), Chassis TS-568Y
	Tuner	77D6S326A03	UHF (WTT-60), Chassis RTS-568Y
M7	Magnet	48K7S7365	Anti-coincidence
M8	Thermostat	8C7S6780	Assembly (Includes Time Delay Resistor & Thermal Switch)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) – 4 Conductor 8485 (Round) – 5 Conductor 8486 (Round) – 8 Conductor

MOTOROLA CHASSIS RTS-568, RTS-568Y, TS-568, TS-568Y

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

		Y, Z5C4B	Y, Z5C4M	Y, Z5C4W	Y, Z5C5CW	Y, Z5G6B	Y, Z5G6M	Y, Z5G7CW	Y, Z5K26B	Y, Z5K26M	Y, Z5K26W	Y, Z5K29B	Y, Z5K29M	Y, Z5K29W	Y, Z5K30B	Y, Z5K30M	Y, Z5K31CW	Y, Z5K32M	Y, Z5K32W	Y, Z5K33B	Y, Z5K33M	Y, Z5K33W	Y, Z5K34CW	Y, Z5T2B	Y, Z5T2BZ	Y, Z5T2CH	Y, Z5T2M	Y, Z5T2W
Window, Channel Indicator	61A748191														●	●	●	●	●	●	●	●	●	●	●	●	●	●
" " "	61C748191	●	●	●	●	●	●	●				●	●	●														
Mask, Pic. Tube	13K754264	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" " (VHF only)	13E65246A09														●	●	●	●	●	●	●	●						
" " (UHF only)	13E65246A11														●	●	●	●	●	●	●	●						
" " (VHF only)	13E65246A07					●	●	●																				
" " (UHF only)	13E65246A08					●	●	●																				
Mask, Channel Indicator Window	13A748192	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
Dial Scale, UHF	34D65491A01	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
Knob, VHF Channel Sel.	1K754267	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" VHF-UHF " "	36C65264A01					●	●	●							●	●	●	●	●	●	●	●						
" UHF " "	1K754257	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" Fine Tuning	36C65263A01					●	●	●							●	●		●	●	●	●	●	●					
" " "	36D65263A01																●											
" " " Front	1V65294A10	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" " " Rear	36K754261	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" Volume	1V65294A09	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" "	36D65261A03					●	●	●							●	●	●	●	●	●	●	●						
" Brt., Vert. Hold	36B743431					●	●	●							●	●	●	●	●	●	●	●						
" " " "	36B751755	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" Contrast	36K754262	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" "	36D65262A01					●	●	●							●	●	●	●	●	●	●	●						
" Tone	36C65483A01	●	●	●	●				●	●	●	●	●	●										●	●	●	●	●
" "	36D65261A01					●	●	●							●	●	●	●	●	●	●	●						
" Horiz. Hold	36K746089	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cabinet, Cherry Wood	16E65395A01																						●					
" Blond	16E65384A02																		●									
" Mahogany	16E65384A01																			●								
" Walnut	16E65384A03																				●							
" Mahogany	16E65520A01																	●										
" Walnut	16E65520A02																		●									
" Cherry Wood	16E5582A01																●											
" Blond	16E65518A02														●													
" Mahogany	16E65518A01															●												
" "	16E65385A01												●															
" Blond	16E65385A03											●																
" Walnut	16E65385A02													●														
" Blond	16E65377A03								●																			
" Mahogany	16E65377A01									●																		
" Walnut	16E65377A02										●																	
" Blond	16E65577A05																						●	●				
" Cherry Wood	16E65382A01							●																				
" Blond Oak	16E65340A03						●																					
" Mahogany	16E65340A01					●																						
" Cherry Wood	16E65358A01				●																							
" Blond	16E65334A02	●																										
" Mahogany	16E65334A01		●																									
" Walnut	16E65334A03			●																								
" Charcoal	16E65577A02																									●		
" Mahogany	16E65577A04																										●	
" Walnut	16E65577A06																											●
Leg, Blond	16E65384A05	●																										
" Mahogany	16E65334A04		●																									
" Walnut	16E65334A06			●																								
"	16E65358A02				●																							
" Blond	16E65340A06					●																						
" Mahogany	16E65340A04						●																					
"	16E65382A02							●																				
"	16E65377A06								●																			
"	16B65375A03									●																		
"	16B65375A04										●																	
"	16E65005A06																		●									
"	16E65005A05																			●								
"	16E65384A04																				●							
"	16E65028A03																					●						
Swivel Base	16E65520A03																	●										
" "	16E65520A04																		●									
" "	16E65385A06											●																
" "	16E65385A04												●															
" "	16E65385A05													●														

TUNER PARTS LIST AND DESCRIPTIONS

OPTT—130

TUBES

ITEM No.	USE	TYPE
V201	RF Amp.	ECC189/6ES8
V202	Mixer - Osc.	6EU8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	1000			EF-001	MFT-1000		CCF-102	CT280A	
C202	1000			EF-001	MFT-1000		CCF-102	CT280A	
C203	2200			BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C204	.5-3				829-3		CV-1	CT365	
C205	4.7			NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCU-V47
C206	680	10%		DI-680	DD-681		CCD-681	GP368	10TS-T68
C207	1.5	10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C208	2-6				829-6		CV-3	CT552	
C209	3.9	10%				C10V4C			10TCC-V39
C210	680	10%		DI-680	DD-681		CCD-681	GP368	10TS-T68
C211	15	N750		N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C212	2-6				829-6		CV-3	CT552	
C213	1000			EF-001	MFT-1000		CCF-102	CT280A	
C214	1000			EF-001	MFT-1000		CCF-102	CT280A	
C215	1000			EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R206	33K			
R202	1meg				R207	47K			
R203	330Ω				R208	15K			
R204	100K				R209	2200Ω			
R205	15K								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K201	40KC Filter	10mmf, 22mmf, 470K	51C747535	Centralab PC-360
K202	40KC Filter	10mmf, 22mmf, 470K	51C747535	Centralab PC-360
K203	Antenna Input Coupling	6.8mmf, 15mmf, 27mmf	51K751641	Centralab PC-365
K204	RF Coupling	15mmf, 120mmf	51K752032	

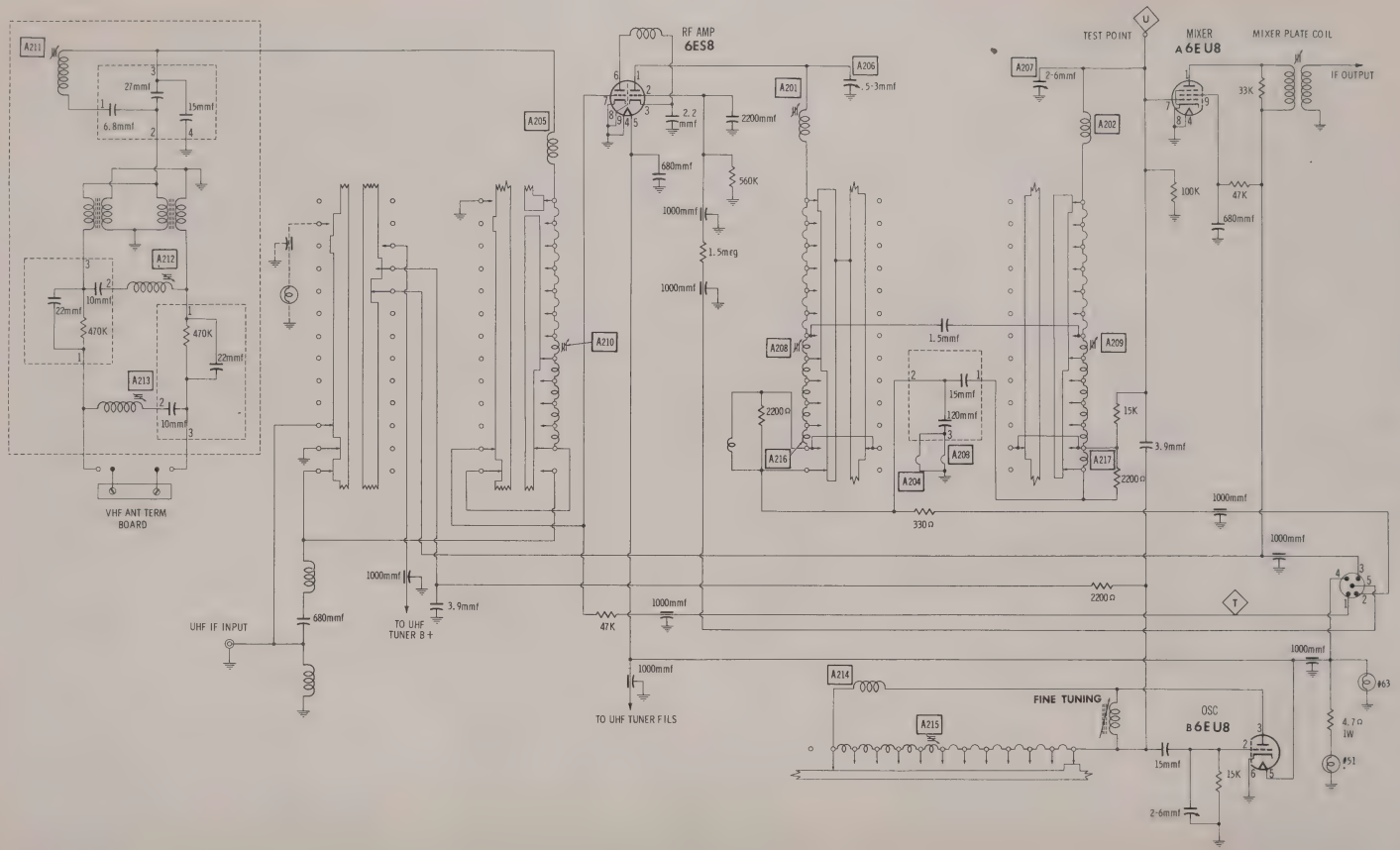
COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	40MC Trap	24K751665	
L202	40MC Trap	24K751665	
L203	Ant. Trans.	24C749398	
L204	RF Choke	24K752270	
L205	Ant. Coils	1V752397	Channel 2-13, Includes Wafer Assembly

ITEM No.	USE	MOTOROLA PART No.	NOTES
L206	RF Choke	24K752261	
L207	RF Coils	1V751663	Channel 2-13, Includes Wafer Assembly
L208	Mixer Grid Coils	1V751662	"
L209	Osc. Coils	1V6507lA57	"
L210	Mixer Plate Coil	24B747838	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M201	Arm and Gears	1V750041	Assembly, Fine Tuning, Includes Oscillator Screw, Actuator, and Idler Gear
	Shaft	1K754145	Fine Tuning, Includes Nylon Driver Gear
	Shaft	1D65339A02	VHF Channel Selector, Includes Pre-Set Wheel



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VHF TUNER with UHF Provisions - OPTT-130Y, ROPTT-130Y

TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Remove the UHF Tuner from the side of the VHF Tuner so that UHF input receptacle of VHF Tuner is accessible. Coils are accessible thru opening in the side of tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Fig. 203	High side thru matching network to UHF input receptacle. Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point ⏀. Low side to chassis.	A216, A217	Adjust for maximum gain and symmetry of response similar to Fig. 204 with markers as shown.

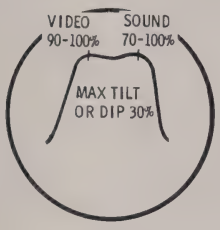


FIG. 201

FIG. 202

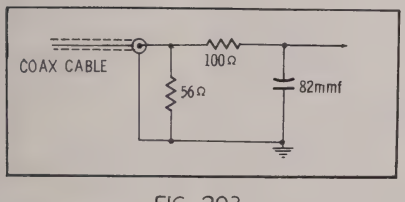


FIG. 203

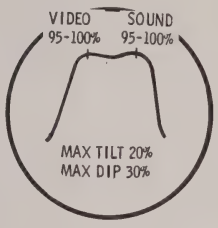
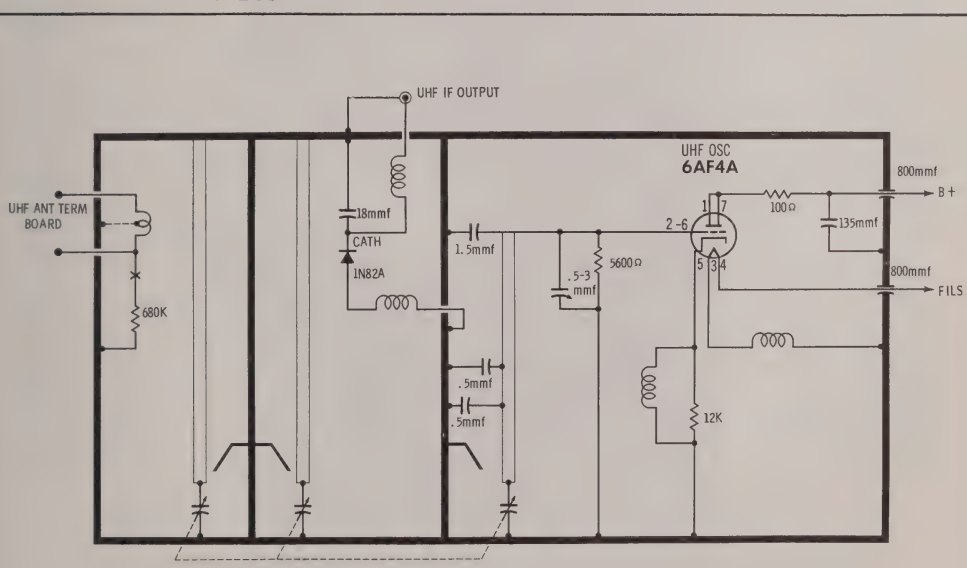


FIG. 204



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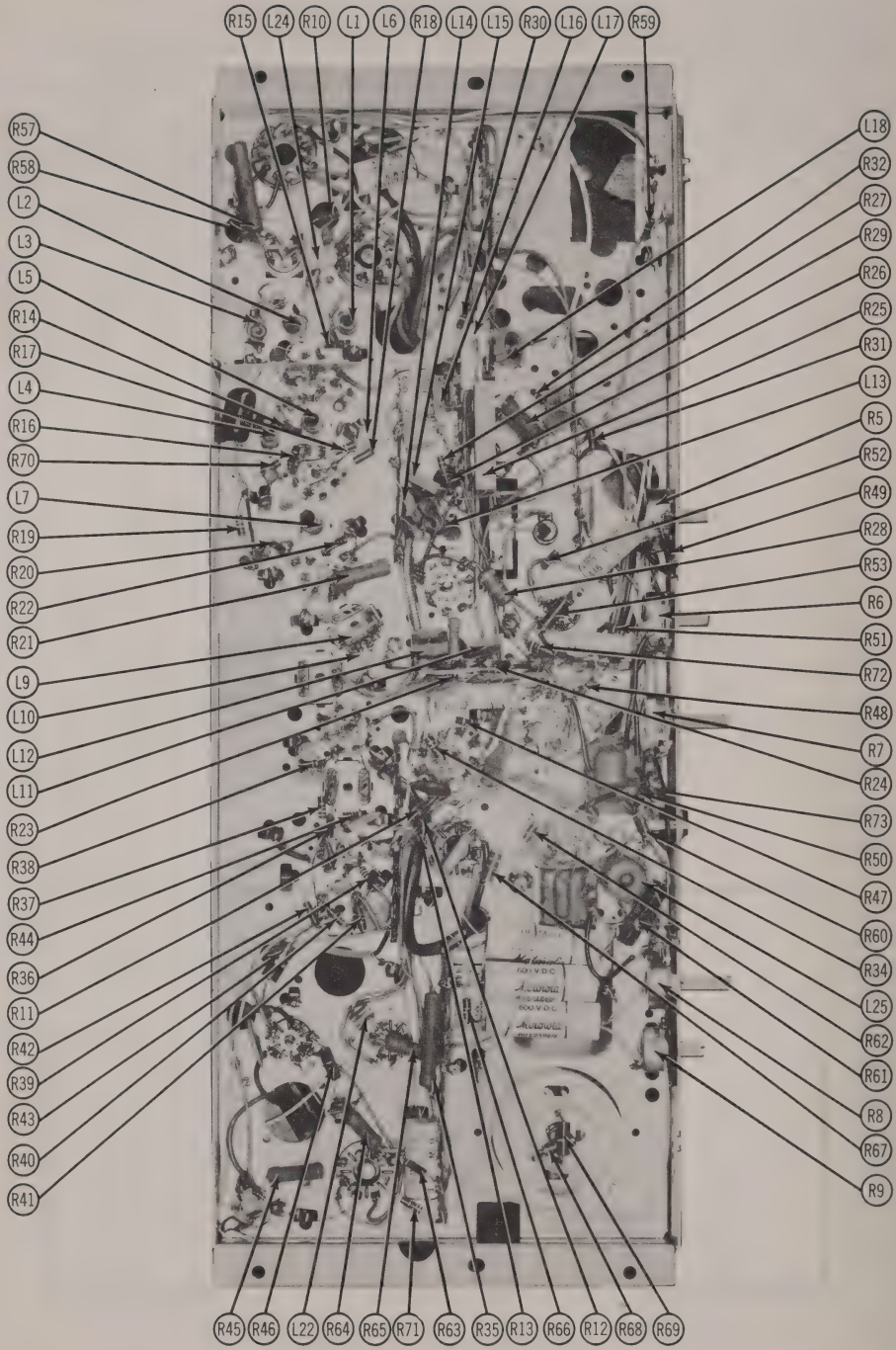
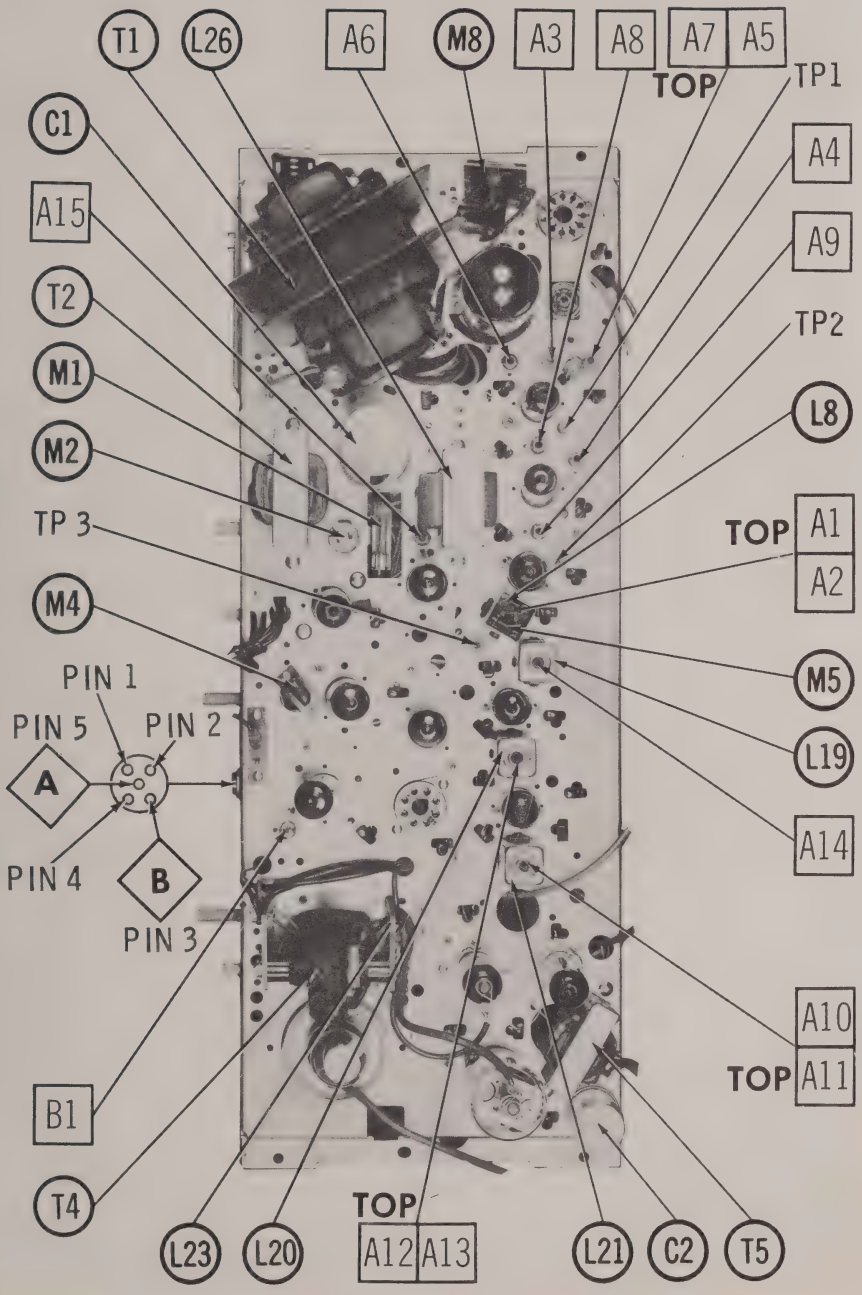
UHF TUNER TT-601



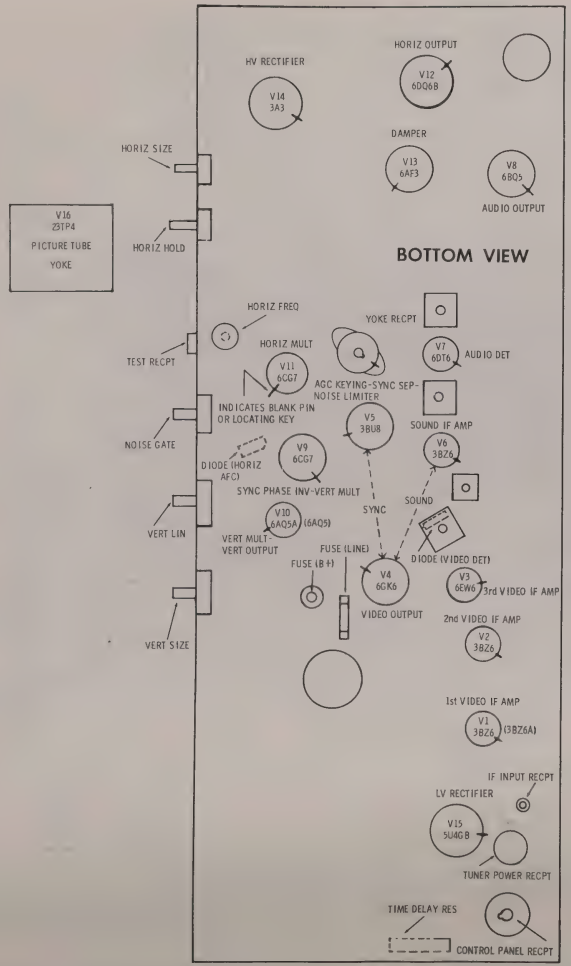
CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

TEST POINTS			PIN 1	-.3V	IF AGC
			PIN 2	200V	HORIZ MULT PLATE CIRC
TP1	95V	1st IF SCREEN	PIN 3	0V	GROUND
TP2	0V	3rd IF GRID	PIN 4	.7V	HORIZ AFC
TP3	-1.8V	VIDEO DET OUTPUT	PIN 5	220V	B +



CHASSIS-TOP VIEW

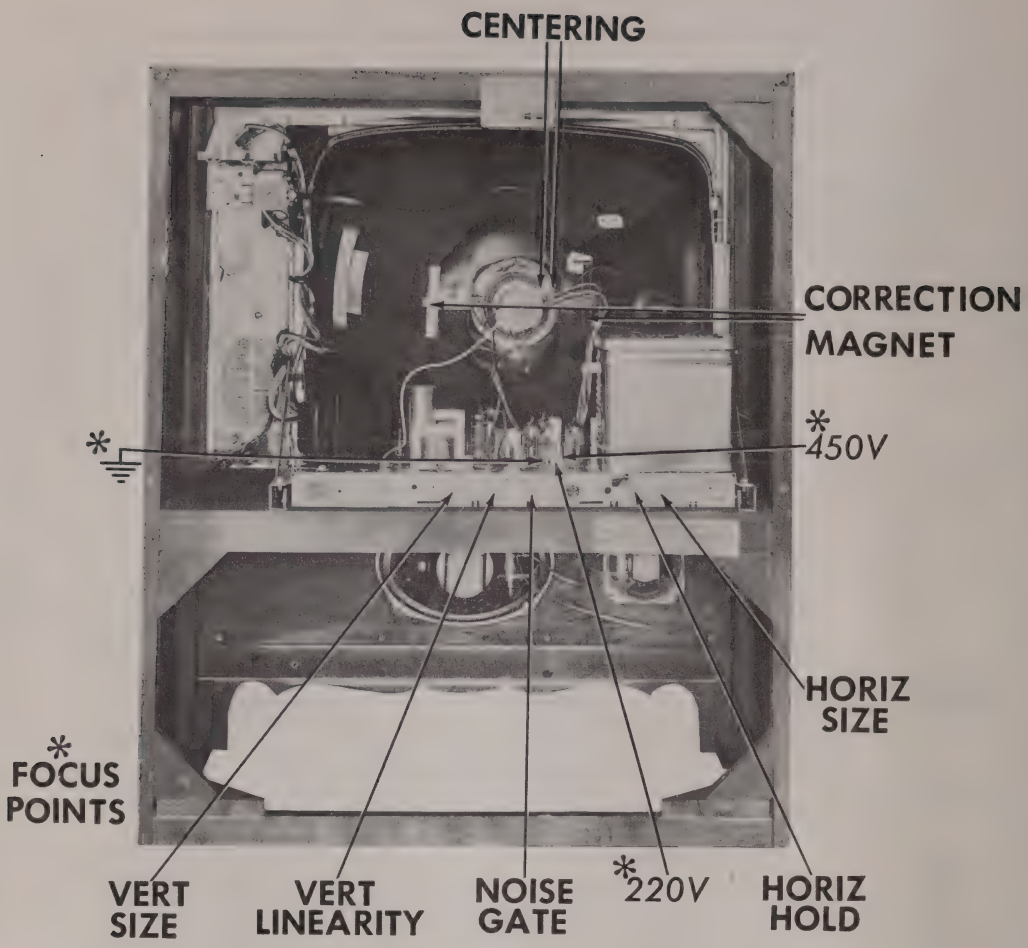
TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	680K	47Ω	.1Ω	.1Ω	▲220Ω	▲220Ω	0Ω		
V2	3BZ6	85K	INF	0Ω	.1Ω	†250Ω	†250Ω	85K		
V3	6EW6	1000Ω	120Ω	.1Ω	0Ω	†6800Ω	†6800Ω	0Ω		
V4	6GK6	■ 30Ω	72K	0Ω	0Ω	.1Ω	NC	†5600Ω	†20K	0Ω
V5	3BU8	†3900Ω	† 47K	2.9meg	.1Ω	.1Ω	†39K	● † 2meg	† 3meg	† 3.7meg
V6	3BZ6	100K	0Ω	.1Ω	0Ω	†13K	†20K	0Ω		
V7	6DT6	3.5Ω	560Ω	.1Ω	0Ω	†390K	†13K	560K		
V8	6BQ5	0Ω	0Ω	180Ω	.1Ω	0Ω	NC	†1100Ω	NC	†500Ω
V9	6CG7	● † 2meg	● 2meg	0Ω	0Ω	.1Ω	†30K	56K	2200Ω	0Ω
V10	6AQ5A	NC	0Ω	0Ω	.1Ω	†680Ω	†180Ω	● 1.3meg		
V11	6CG7	†60K	● 100K	1000Ω	0Ω	.1Ω	†12K	8meg	1000Ω	NC
V12	6DQ6B	TP	0Ω	NC	● †4000Ω	1meg	NC	.1Ω	0Ω	TOP CAP † 12Ω
V13	6AF3	NC	NC	NC	0Ω	.1Ω	NC	TP	NC	†30Ω TOP CAP ¶
V14	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 245Ω
V15	5U4GB	TP	¶	TP	19Ω	NC	20Ω	NC	¶	
V16	23TP4	Ω	100K	Pin 6 †33K	Pin 10 † 360K	Pin 11 ● 280K	Pin 12 .1Ω			
V201	ECC189 6ES8	†6000Ω	400K	INF	0Ω	.1Ω	■0Ω	4meg	0Ω	0Ω
V202	6EU8	†8200Ω	15K	†10K	0Ω	.1Ω	0Ω	100K	0Ω	†55K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 2 OF V2.
■ MEASURED FROM PIN 3 OF V201.
† MEASURED FROM PIN 8 OF V15.
† MEASURED FROM CAP OF V13.
NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Adjust the Brightness and Contrast Controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from point (D) to chassis. Connect a .1mfd, 400 volt capacitor from point (E) to chassis.

Adjust Horizontal Hold to the point where the picture is almost stable horizontally.

Remove the capacitor from point (E) and adjust the Horizontal Frequency Slug (B1) to the point where the picture is almost stable horizontally.

Remove the clip lead from point (D) and chassis. Adjust the Horizontal Hold Control until the picture is synchronized horizontally.

Adjust the Horizontal Size for a picture slightly wider than necessary to fill the picture mask horizontally.

DISASSEMBLY INSTRUCTIONS

CHASSIS & PICTURE TUBE ASSEMBLY REMOVAL

1. Remove 10 screws holding rear cover.
2. Remove rear cover.
3. Remove 3 plugs from tuner to chassis.
4. Remove speaker leads.
5. Remove 4 chassis bolts.
6. Remove chassis assembly.

CONTROL PANEL REMOVAL

1. Remove 5 push-on type knobs.
2. Remove 4 screws and remove control panel.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

MODEL 1118CH (CH. 528.51680)

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 515 FOLDER 2

MODEL 1118CH (CH. 528.51680)

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	SILVERTONE	MODELS	CHASSIS	MODELS	CHASSIS
		PC-1160, PC-1162, PC-1164 ...	456.51740	1160, 1162, 1164 ...	528.51740
		PC-1161, PC-1163, PC-1165 ...	456.51741	1161, 1163, 1165 ...	528.51741
		PC-1114	456.51760	1114	528.51760
		PC-1116, ...	456.51761	1116	528.51761
		PC-1106, PC-1118CH, PC-1118L.	456.51680	1106, 1118CH, 1118L .	528.51680
		PC-1107, PC-1119CH	456.51681	1107, 1119CH	528.51681

SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Fifteen, UHF - Sixteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 140 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws at front (bottom) of mask. Pull top of mask out far enough to remove 2 springs (at top).

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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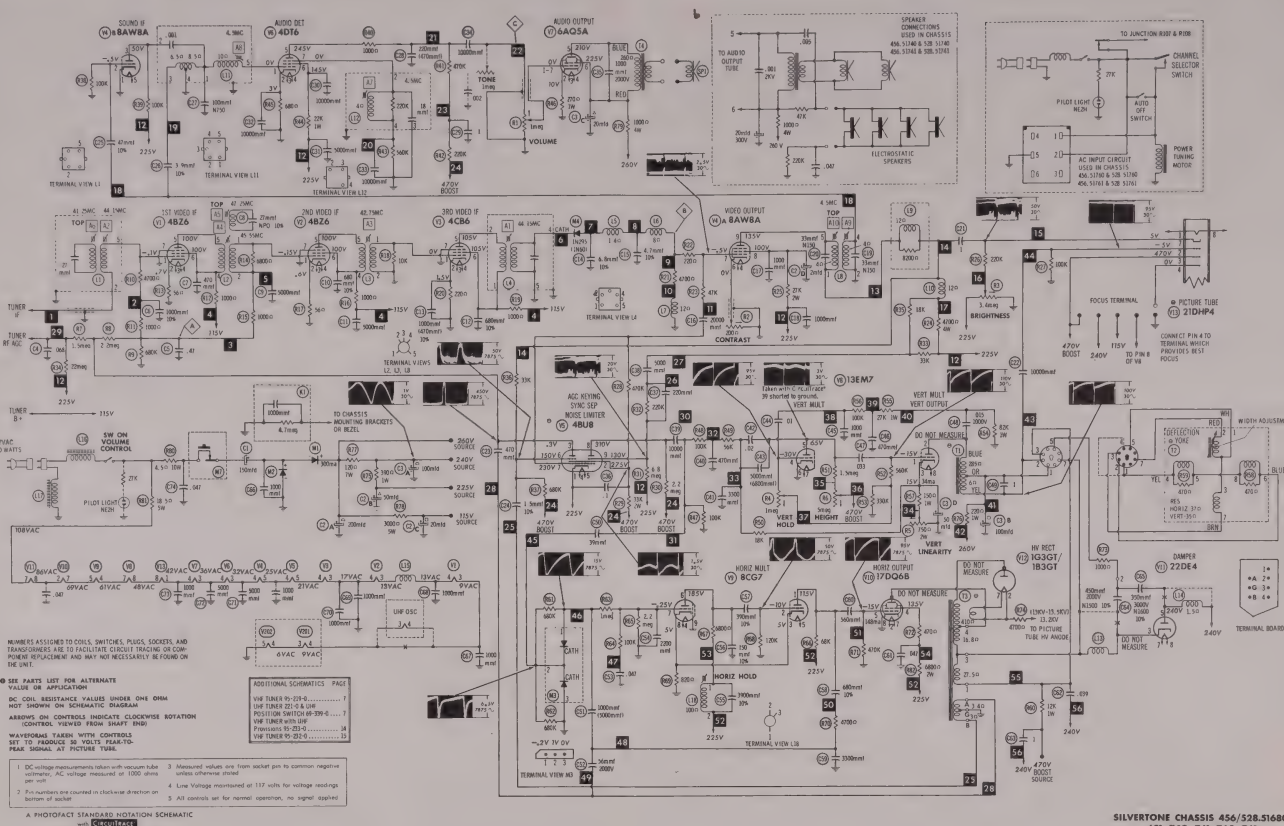
SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

SET 515 FOLDER 2



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

ADDITIONAL SCHEMATICS PAGE

VHF TUNER 95-229-0 7
UHF TUNER 221-0 & UHF POSITION SWITCH 69-339-0 7
VHF TUNER with UHF Prevue-ers 95-253-0 14
VHF TUNER 95-252-0 15

1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise stated

4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

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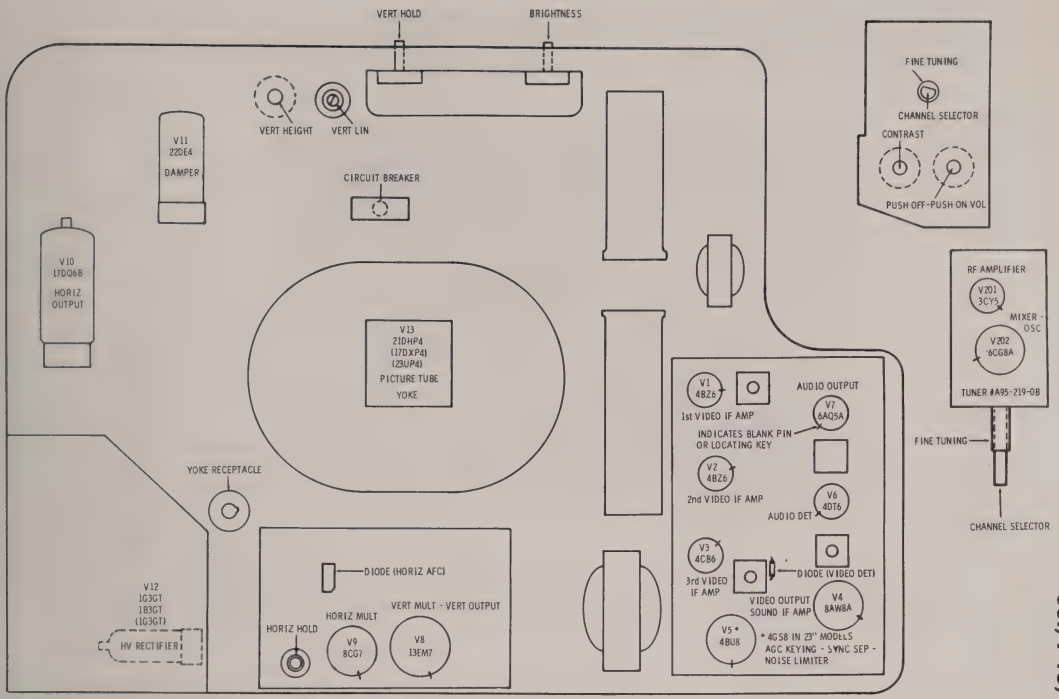
SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

TUBE PLACEMENT CHART



SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

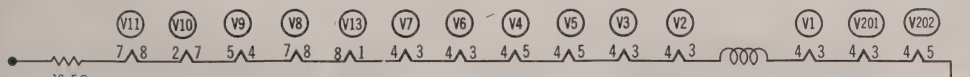
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V13
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, Rectifiers (B+)
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. AFC), V9

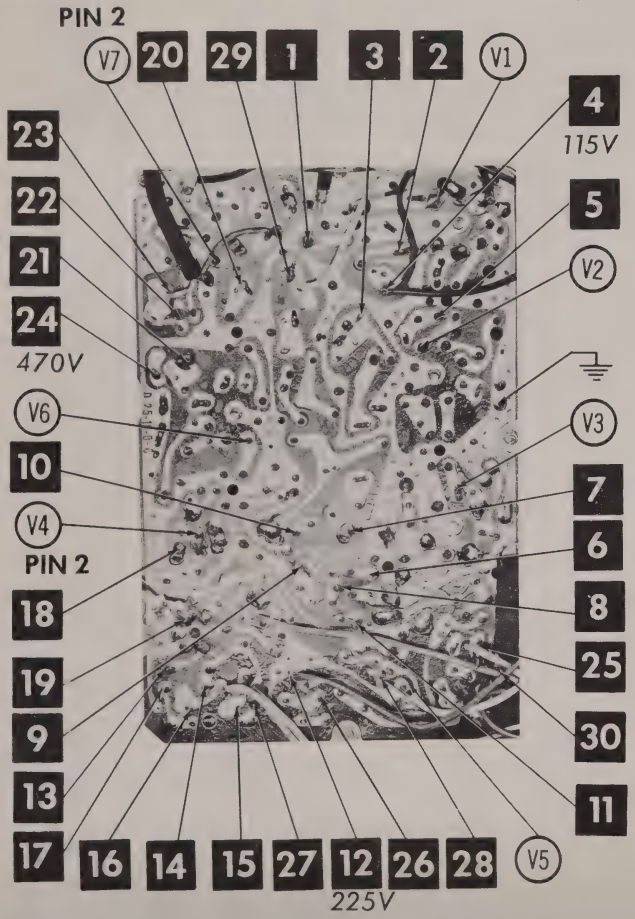
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V13
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



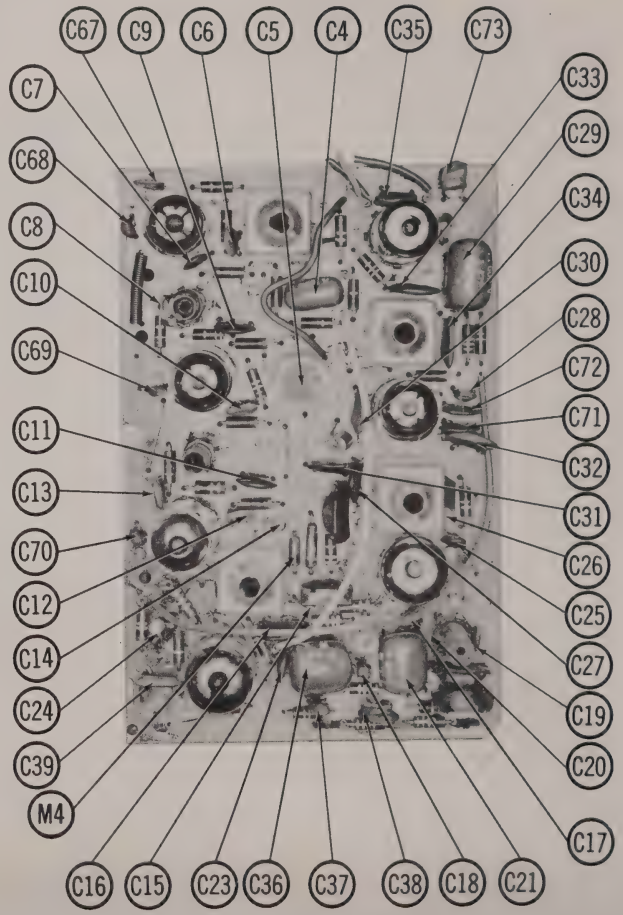
FOLDER 2



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VIDEO, SOUND, SYNC PRINTED BOARD



VIDEO, SOUND, SYNC PRINTED BOARD
CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Short the antenna terminals together, but not to chassis.
Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Detune A1, A4, A5, A6, and Mixer Plate Coil by turning the cores almost out of the coil forms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.15MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point Ⓑ. Common to chassis. (Across Video Det. load)	A1, A2, & Mixer Plate Coil	Attenuate generator output to maintain not more than 2 volts on VTVM. Adjust for maximum deflection.
2.	"	"	42.75MC	"	"	A3	"
3.	"	"	45.55MC	"	"	A4	"
4.	"	"	47.25MC	"	"	A5	Increase generator output. Adjust A5 for MINIMUM deflection. Repeat steps 3 and 4.
5.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Short the antenna terminals together, but not to chassis.
Attenuate sweep generator output to maintain not more than 2 volts peak to peak on scope.
If separate marker generator is used, couple loosely to output cable of sweep generator.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.25MC (10MC Swp)	41.25MC 42.55MC 43.8MC 44.15MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch Mixer Plate Coil to place 45.75MC marker at 50%. Retouch A1 for proper tilt.

SOUND IF ALIGNMENT

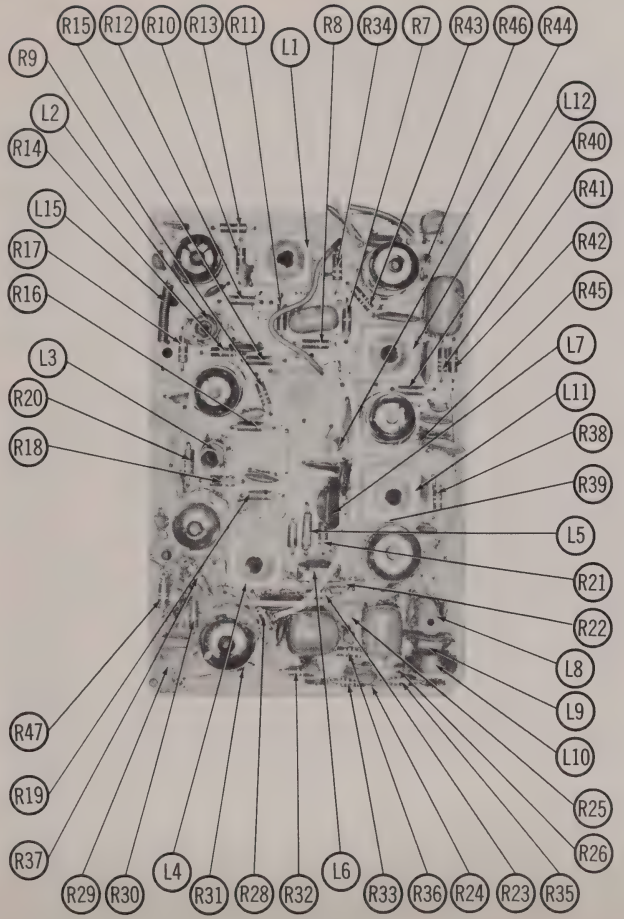
Connect the negative lead of a 5 volt bias supply to point Ⓐ. Positive to chassis.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.05mfd	High side to point Ⓑ. Low side to chassis. (.1 volt output)	4.5MC (400∿ FM 15KC Swp)	Any non-interfering channel	AC probe to point Ⓒ. Common to chassis.	A7, A8	Adjust for maximum deflection. If two peaks are found, use the greater peak.
2.	"	High side to point Ⓑ. Low side to chassis. (500 microvolts)	"	"	"	A9	Adjust for maximum deflection. Retouch A8 for maximum deflection.

4.5MC TRAP ALIGNMENT

Tune in a TV signal and adjust the Fine Tuning until a 4.5MC beat interference is noted in the picture. Adjust A10 until the horizontal scanning lines are smooth and continuous.

FIG.1



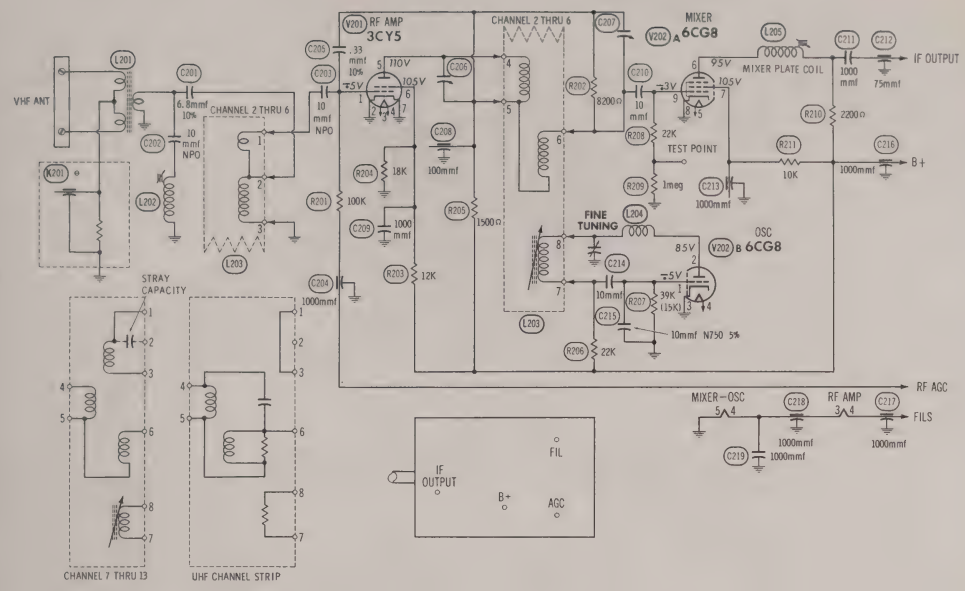
VIDEO, SOUND, SYNC PRINTED BOARD
RESISTOR & INDUCTOR IDENT.

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BZ6	685K	56Ω	3Ω	4Ω	†4000Ω	†4000Ω	0Ω		
V2	4BZ6	680K	56Ω	4Ω	5Ω	†4000Ω	†4000Ω	0Ω		
V3	4CB6	0Ω	220Ω	5Ω	6Ω	†4000Ω	†4000Ω	0Ω		
V4	8AW8A	0Ω	100K	†100K	10Ω	7Ω	•100Ω	4900Ω	†27K	†5200Ω
V5	4BU8	†500Ω	†45K	2.8meg	7Ω	6Ω	†38K	†515K	†2.2meg	†6.8meg
V6	4DT6	18Ω	680Ω	10Ω	11Ω	†700K	†22K	560K		
V7	6AQ5A	NC	270Ω	11Ω	13Ω	†1300Ω	†1000Ω	•0Ω		
V8	13EM7	900K	†505Ω	•400Ω	•650K	• †5meg	0Ω	20Ω	15Ω	
V9	8CG7	†68K	120K	820Ω	20Ω	23Ω	†7300Ω	1.3meg	820Ω	NC
V10	17DQ6B	NC	35Ω	TP	†7700Ω	470K	NC	23Ω	0Ω	TOP CAP †17Ω
V11	22DE4	TP	NC	¶	NC	†120Ω	TP	50Ω	35Ω	
V12	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †425Ω
V13	21DHP4	13Ω	100K	†12K	0Ω	NC	NC	•250K	15Ω	
V201	3CY5	4.3meg	0Ω	2Ω	3Ω	†4500Ω	†15K	0Ω		
V202	6CG8A	39K	†25K	0Ω	2Ω	0Ω	†5200Ω	†13K	0Ω	1meg
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION
TP TIE POINT

RESISTANCE MEASUREMENTS



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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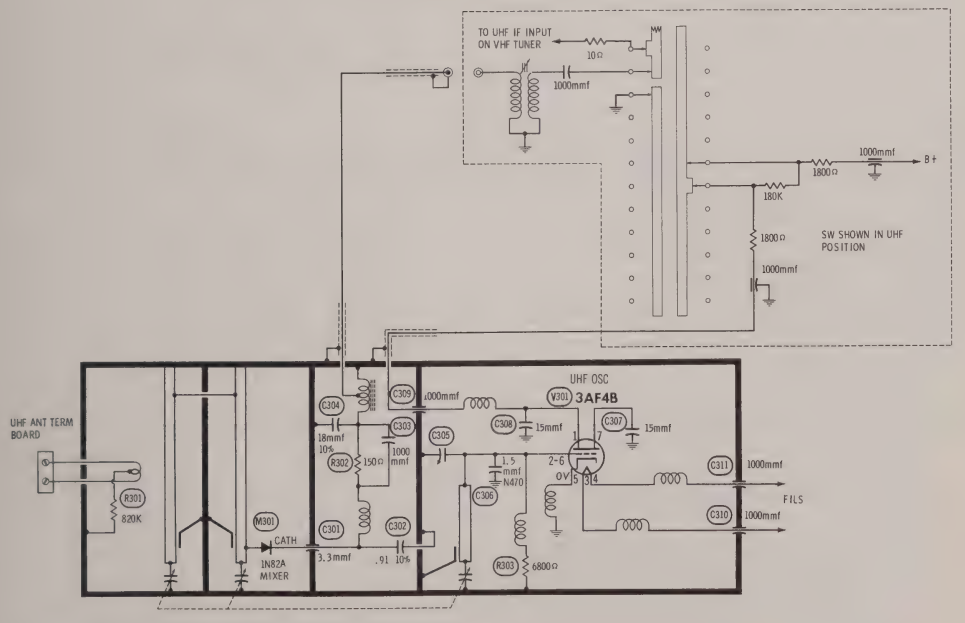
VHF TUNER 95-219-0



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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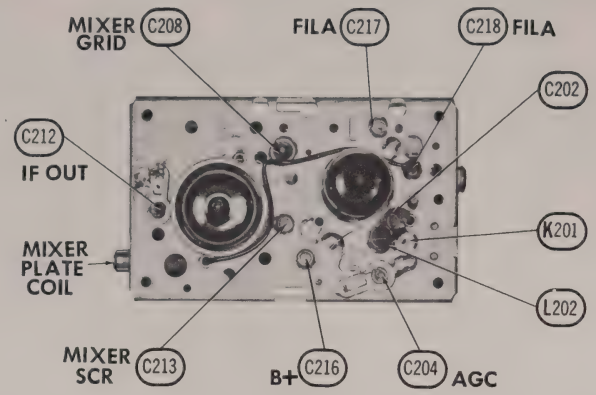
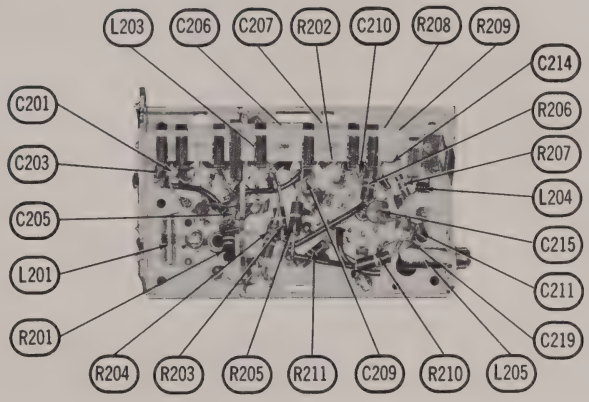
UHF TUNER 221-0 & UHF POSITION SWITCH 69-339-0

SET 515 FOLDER 2





TUNER 95 – 219 – 0

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT FOR TUNERS #95-232-0 AND #95-233-0

Suggested Alignment Tools: GENERAL CEMENT #8721, 8722
WALSCO #2519

OSCILLATOR ALIGNMENT

Turn set on and allow 10 minutes warm-up period. Turn to the highest channel received in your area and set the Fine Tuning to the center of its range.
Adjust A201 for clearest picture. Turn the channel selector to the next operating channel and adjust the Fine Tuning for clearest picture. Adjust the Fine Tuning for each channel for best picture. If on any channel, the Fine Tuning cannot clear the picture up, retouch A201 and readjust the Fine Tuning for all channels.

RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

TUNER ALIGNMENT FOR TUNER #95-219-0

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the channel selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

VHF TUNER PARTS LIST AND DESCRIPTIONS

95–219–0

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	3CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	6.8 10%		NPO-SI 6.8	TCZ-6R8	L10V68	CCTO-6R8	CNO-568	10TCC-V68
C202	10 NPO		NPO-DI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C203	10 NPO		NPO-DI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	.33 10%	Pt. #3176-338						
C206								
C207								
C208	100	Pt. #273-101						
C209	1000		DI-1000	DD-102	L10DI	CCD-102	GP210	10TS-D10
C210	10		DI-10	DD-100	L10QI	CCD-100	GP410	10TS-Q10
C211	1000		DI-1000	DD-102	L10DI	CCD-102	GP210	10TS-D10
C212	75	Pt. #272-750						
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	10		DI-10	DD-100	L10QI	CCD-100	GP410	10TS-Q10
C215	10 N750 5%		N750-DI 10	DTN-10	C10Q1U		CN7-410	10TCU-Q10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		DI-1000	DD-102	L10DI	CCD-102	GP210	10TS-D10

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	100K	
R202	8200Ω	
R203	12K	
R204	18K	

ITEM No.	RATING	REMARKS
R205	1500Ω	
R206	22K	
R207	39K	(15K) *
R208	22K	

ITEM No.	RATING	REMARKS
R209	1meg	
R210	2200Ω	
R211	10K	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L201	Ant. Trans.	3292-501	
L202	Trap	2110-26	
L203A	Ant., RF & Osc.	3262-504	Channel 2
B	"	3263-504	Channel 3
C	"	3264-504	Channel 4
D	"	3265-504	Channel 5
E	"	3266-504	Channel 6
F	"	3267-504	Channel 7
G	"	3268-504	Channel 8

ITEM No.	USE	SILVERTONE PART No.	NOTES
L203H	Ant., RF & Osc.	3269-504	Channel 9
I	"	3270-504	Channel 10
J	"	3271-504	Channel 11
K	"	3272-504	Channel 12
L	"	3273-504	Channel 13
M	UHF IF	3261-504	
L204	RF Choke	309-5	
L205	Mixer Plate	2110-29	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K201	Antenna Filter	*		

* Some versions may use component combination Pt. #330-1 (.6-1meg, 470mmf).

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

FOLDER 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC * USE	GENERAL ELECTRIC * TYPE	ITEM No.	RAYTHEON * USE	RAYTHEON * TYPE
V1	1st Video IF Amp.	4BZ6	V7	Audio Output	6AQ5A
V2	2nd Video IF Amp.	4BZ6	V8	Vert. Mult. - Vert. Output	13FM7
V3	3rd Video IF Amp.	4CB6			6CG7
V4	Video Output-Sound IF Amp.	8AW8A	V9	Horiz. Multi.	17DQ8B
V5	AGC Keying-Sync Sep. - Noise Limiter	4BU8 ①	V10	Horiz. Output	22GH4
V6	Audio Detector	4DT6	V11	Damper	1G3GT/1B3GT (1G3GT) ②
V12	Rectifier				

① 23" Models use 4GB8 in this application. ② Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V13	21DHP4 ① 17DXP4 ① 23UP4 ①		21DHP4 ① 17DXP4 ②		21DHP4 ② 17DXP4 ②	① Aluminized ② Silver Screen "65"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	CENTRALAB PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	150	18-138-5	PRR1530	BR15015	TC4095	TD-150-150	TVA-1432	
C2A	200	220	18-117-3	PRR1534-47-90					
B	150	300							
C	30	300							
D	3	300							
C3A	100	350	18-118-5	AFH4-48-30	C4474	*FP326.75	*TMT-3274	TVL6-3584 *	
B	100	300			*BR19025	*TC39	*TD-150-300		
C	30	50							
D	50	50							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.068 200V		P388N-068			CUB4B68	4DP-5-683	GFM-4168 4TM-868
C5	.47 100V		P388N-47			CUB2P47	1DP-4-474	GFM-2047 2TM-P47
C6	1000 10%		DI-1000	DD-102		PM6D8	CCD-102	GP20 10TS-D00
C7	470		BPD-0047	DD-471		BYA107Q47	CCD-471	B-347 10TS-T47
C8	47	NPO 10%	NPO-DI 45	TCZ-47		CUNQ1TC	CCTO-370	CDV30-427 10TCC-427
C9	5000	10%	BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C10	500	10%	DI-500	DD-501		5NE768	CCD-501	GP30S 10TS-T68
C11	5000	10%	BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C12	500	10%	DI-500	DD-501		5NE768	CCD-501	GP30S 10TS-T68
C13	1000	10% (470) †	DI-1000	DD-102		5RS01	CCD-102	GP20 5HK-D10
C14	8.5	10%	NPO-SI 8.5 B	TCZ-8R8		SVC08C	CCTO-4R8	CD5-8R5 5HK-S85
C15	6.7	10%	NPO-SI 6.7	TCZ-6R7		C0V47C	CCTO-6R7	CMO-5A7 10TCC-V47
C16	30000		BPD-03	DD-303		BYA102F	CCD-303	B-351 5HK-S30
C17	1000		BPD-001	DD-102		BYA102L	CCD-102	B-350 5HK-D10
C18	1000		BPD-001	DD-102		BYA107A	CCD-102	B-350 5HK-D10
C19	33	N150						10TCF-Q33
C20	33	N150						10TCF-Q33
C21	.1	600V	P488N-1	DF-104		CUB4P1	4DP-3-104	GFM-401 4TM-P10
C22	10000		BPD-01	DD-103		BYA108A	CCD-103	B-110 5HK-S10
C23	470		BPD-00047	DD-471		BYA107A47	CCD-471	B-347 10TS-T47
C24	1.8	10%	NPO-SI 1.8	TCZ-1R8		C1V15C		CMO-S15 10TCC-V15
C25	47	10%	DI-47	TCZ-47		C0V47C	CCD-470	CMO-S47 10TCC-V47
C26	3.9	10%				C1V4C		10TCC-V39
C27	100	N750	N750-DI 100	D7N-100		CUF7U	CCTN-101	CN7-3U0 10TCC-T10
C28	330	(470) †	DI-330	DD-331		LOT22	CCD-331	B-332 10TS-T22
C29	.1		P488N-1	DF-104		CUB4P1	4DP-3-104	GFM-401 4TM-P10
C30	10000		BPD-01	DD-103		BYA108I	CCD-103	B-110 5HK-S10
C31	5000		BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C32	10000		BPD-01	DD-103		BYA108I	CCD-103	B-110 5HK-S10
C33	10000		BPD-01	DD-103		BYA108A	CCD-103	B-110 5HK-S10
C34	10000		BPD-01	DD-103		BYA102E	CCD-103	B-110 5HK-S10
C35	10000	2000V	BVD-10-1000	DD2A-01		HVBYB01	CCD-102	16V-S10 20DA-01
C36	.1	600V	P488N-1	DF-104		CUB4P1	4DP-3-104	GFM-401 4TM-P10
C37	330		DI-330	DD-331		LOT22	CCD-331	B-332 10TS-T22
C38	5000		BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C39	10000		BPD-01	DD-103		BYA108I	CCD-103	B-110 5HK-S10
C40	470		BPD-00047	DD-471		BYA107A47	CCD-471	B-347 10TS-T47
C41	3300		BPD-0033	DD-332		BYA102E	CCD-332	B-333 5HK-D33
C42	.01	400V	P488N-02	DF-203		CUB4B2	4DP-2-203	GFM-412 4TM-S20
C43	5000	(6800) a	BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C44	.01	400V	P488N-01	DF-103		CUB4B	4DP-1-103	GFM-411 4TM-S10
C45	1000		BPD-001	DD-102		BYA102E	CCD-102	B-350 5HK-D10
C46	470		BPD-00047	DD-471		BYA107A47	CCD-471	B-347 10TS-T47
C47	.033	400V	P488N-033	DD-333		CUB6333	4DP-2-333	GFM-6133 6TM-S33
C48	.015	1000V	P018N-015	DD-153		CUB1D15	1H2P-4-153	GFM-3015 1TM-S15
C49	.1	200V	P388N-1	DF-104		CUB2P1	2DP-3-104	GFM-301 2TM-P10
C50	39		DI-39	DD-390		LOQ2T	CCD-390	B-391 10TS-Q39
C51	1000	(5000) a	BPD-001	DD-102		BYA102D	CCD-102	B-310 5HK-D10
C52	56	2000V	BVD-10-56	DD30-560		BYA2Q56	3CD-560	3DP-455 20DA-Q56
C53	.047	200V	P388N-047	DD-503		CUB2S47	2DP-3-473	GFM-4147 2TM-S47
C54	3300		BPD-0033	DD-332		BYA102E	CCD-332	B-333 5HK-D33
C55	3900	10%	1485-0039			1RS039	CM-3D1-392K	MC2462.5 MS-339
C56	150	10%	DI-150	DD-151		L2T15	CCD-151	GP315 10TS-T15
C57	390	10%	1485-00039			5RS739	CM-19B-39K	MCB2345 MS-339
C58	680	10%	1485-00068			5RST68	CM-19B-68K	MC2249 MS-368
C59	3300		BPD-0033	DD-332		BYA102D3	CCD-332	B-333 5HK-D33
C60	560		DI-560	DD-561		L0T56	CCD-560	B-356 10TS-T56
C61	.047	600V	P488N-047	DD-503		CUB4S47	4DP-3-473	GFM-4147 4TM-S47
C62	.033	1000V	P084CM-039			DFM6S333	1H2P-4-333	GFM-3033 1TM-S33
C63	.1	600V	P488N-1	DF-104		CUB4P1	4DP-3-104	GFM-401 4TM-P10
C64	450	2000V N1500 10%	P. #20-245-0					

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C65	350 3000V	N1500 10%	P. #20 245-0					
C66	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C67	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C68	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C69	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C70	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C71	5000		BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C72	5000		BPD-005	DD-502		BYA102E	CCD-502	B-350 5HK-D50
C73	1000		BPD-001	DD-102		BYA101K	CCD-102	B-310 5HK-D10
C74	.047 600V		P488N-047	DD-503		CUB2S47	4DP-3-473	GFM-4147 4TM-S47

† Alternate Value. a Value used in Ch. 456/528.51740, 41, 60, 61.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESIST ance	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	↓	24-428	APL-70	C47S-1meg-2	B1S-137	PP68A	Volume
B	Shaft			AK-8	NS-3/16	Not Req.	DS-37	
C	Switch			Not Req.	Not Req.	S53	Not Req.	Push-Pull Off-On
R2A	200Ω	↓	24-427	B-2		B1J-301		Contrast
B	Shaft			AK-8		S53		
R3A	3 4meg	↓	24-430	F1-78			FA35L	Brightness
B	Shaft			Not Req.		T ① -1513	Not Req.	
R4A	1meg	↓	24-460	F1-51			FA35L	Vert. Hold
B	Shaft			Not Req.		T ① -1514	Not Req.	
R5	750Ω	2(WW)	24-441	WH-751	2B-800	11S-800	FL-750	Vert. Linearity
R6	500Ω	1	24-437	TT-57	B47-1meg-S	RLC5	PTA45L	Height

† "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B1J-160, P13-022 (Panel) (Not available as a factory assembled unit). R5 (Retainer)

‡ "CONCENTRIKIT" Equivalent: K-8 Kit with Base Elements and Shafts: B1J-137, P13-022 (Panel) (Not available as a factory assembled unit). R5 (Retainer)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	1.5meg	
R8	330K	
R9	680K	
R10	470Ω	
R11	100Ω	
R12	100Ω	
R13	56Ω	
R14	680Ω	
R15	100Ω	
R16	100Ω	
R17	56Ω	
R18	10K	
R19	100Ω	
R20	270Ω	
R21	470Ω	
R22	220Ω	
R23	47K	
R24	4700Ω 4W	(Pt. #6-171-0 IRC #PW3-4700)
R25	2TK 2W	
R26	330K	
R27	100K	
R28	470K	
R29	33K 2W	
R30	2.2meg	
R31	6.8meg	
R32	1275	

* Alternate Value.

ITEM No.	RATING	REMARKS
R33	33K	
R34	22meg	
R35	18K	
R36	33K	
R37	680K	
R38	100K	
R39	100K	
R40	100Ω	
R41	470K	
R42	220K	
R43	560K	
R44	47K 1W	
R45	680Ω	
R46	270Ω 1W	
R47	100K	
R48	100K	
R49	56K	
R50	18K	
R51	1.6meg	
R52	560K	
R53	330K	
R54	82K 1W	
R55	27K 1W	
R56	4.5Ω 10W	
R57	150Ω 1W	
R58	470Ω	
R59	470Ω	

ITEM No.	RATING	REMARKS
R60	12K 1W	
R61	680K	
R62	680K	
R63	1meg	
R64	100K	
R65	2.2meg	
R66	68K	
R67	680Ω	
R68	120K	
R69	820Ω	
R70	4700Ω	
R71	470K	
R72	470Ω	
R73	100Ω	
R74	4700Ω	
R75	390Ω 1W	
R76	220Ω 1W	
R77	180Ω 7W	(Pt. #61-194-0 IRC #PW10-180Ω)
R78	2000Ω 5W	(Pt. #61-197-0 IRC #PW5-2000Ω)
R79	1000Ω 4W	(Pt. #61-303-0 IRC #PW5-1000Ω)
R80	15K 1W	Pt. #61-191-0
R81	18.5Ω 5W	Pt. #61-192-0
R82	68000 2W	(8200Ω) *

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Isolation	1000mmf, 4.7meg	13-17-3	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1A	1st Video IF	10-25-3				
B	4.35MC Trap					
L2A	2nd Video IF	10-21-3				
B	47.25MC Trap					
L3	3rd Video IF	10-22-3				
L4	4th Video IF	10-23-3				
L5	RF Choke (12uh)	10-45-1	BC-566	4622	RTC-8532	
L6	Peaking (80uh)	10-48-1	TV-193	8605	RTC-8573	
L7	Peaking (220uh)	10-47-1	TV-198	‡ 6630 *	RTC-8576	
L8A	4.5MC Trap	10-29-3				
B	1st Sound IF					
L9	Peaking (270uh)	10-470-1 ‡	TV-198 *	6630 *	RTC-8576 *	
L10	Peaking (180uh)	10-47-1	TV-198	6630	RTC-8576	
L11	2nd Sound IF	10-30-3				
L12	Quadrature	10-17-5				
L13	RF Choke (2uh)	10-172-1	BC-562 *	4606 *	RTC-8517	

‡ 8200Ω Resistor moulded into form.
* Parallel with 8200Ω Resistor

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L14	RF Choke (4.7uh)	10-154-1	BW-83K	4629	RTC-8505	
L15	Filt. Choke (1uh)	10-156-1	BC-561	4602	RTC-8515	
L16	Line Choke (40uh)	10-149-1	TV-180	8178	RTC-8552	
L17	Line Choke (40uh)	10-149-1	TV-180	8178	RTC-8593	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	Horiz. Stabilizer	10-34-5						HS-16

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	80-8-2A	A-2621	VO-25 1 2	A-8347 1	26S15	A-134X	
	Vert. Output	80-8-2						
T2	Yoke (Horiz. 21MH)	D60-11-4C *		PCM-1824 3 4	DY-46A	Y-53 3	Y-52 & NW20	
	10° (Vert. 20MH)			PCM-1824 5 6	DY-46A	Y-53 3	Y-52 & NW20	
	Alt. Yoke	80-11-4 *						
	Alt. Yoke	80-13-4 †						
	Rear Cover	21-404-0 †						
	Rear Cover	21-390-0 *						
	Clamp, Centering Dev.	22-143-3						
	Width Device	83-1335 *						
	Width Device	83-1337 †						
T3	Vert. Output	D30-13-2D						
	Alt. Horiz. Output	80-13-2						

① Drill new mounting hole(s).
② Use original yoke leads, plug, rear cover, centering device and damping network if necessary.
③ Connect yoke terminal #3 to plug pin #7; yokes #2 and #7 to plug pin #6; yoke #1 to plug pin #5.
* 17" and 21" Models. † 23" Models

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6000Ω	3-4Ω	80-130-4D ①	A-2830	A-3977	26H51	S-3X	① Alternate Part #80-135-1

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V C IMP	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	33-383-4B *	5A07R	* Used in Model 118CK, L, 119CH
	5" x 5"	PM	3-4Ω	33-383-4	5A	† May be used in Models 118CH, L; 119CH
	3" x 5"	PM	3-4Ω	33-379-4 *	3SA05	* Used in Models 106, 107, 114, 116
	6"	PM	3-4Ω	33-400-4 †	6A5	† Two used in Models 1160, 1161, 1162, 1163, 1164, 1165

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: SILVERTONE	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	300mA	86-4	1N1763	40H	SR500	Silicon
M2	300A	86-4-3	1N1763	40H	SR500	Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3		60C1				Dual Selenium (Common Cath. Type)
M4	1N295			1N295	1N295	Video Detector (Pigtail)
	1N60			1N60	1N60	Alternate

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
MS	Tuner	95-319-0	† STANDARD COIL REPLACEMENT #CQ8-422A.
			VHF with UHF Provision, Ch. 528/418.51680, 51681
	UHF Switch		Position Switch used with Tuner 95-329-0 & 95-321-0
			in VHF/UHF Models
	Tuner	95-323-0	VHF, Ch. 456/528.51760, 51780
	Tuner	95-323-0	VHF with UHF Provision, Ch. 456/528.51761, 51781
	Tuner	95-321-0	UHF
MS	Antenna	33-158-0	JFD REPLACEMENT #TA-304, Models 118CH, L, 119CH
	Antenna	33-239-3	JFD REPLACEMENT #TA-406, Models 1106, 1107

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS (cont)

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M7	Circuit Breaker	43-12-2	
	Printed Board	84-11682	Horizontal & Vertical Oscillator Assembly, Complete (Less Tubes), Chassis 456/528.51680, 51681
	Printed Board	84-11682-1	Horizontal & Vertical Oscillator, Assembly, Complete (Less Tubes), Chassis 456/528.51760, 51761, 51740, 51741
	Printed Board	25-18-0	Horizontal & Vertical Oscillator (Board Only) (Less All Components)
	Printed Board	84-11715	IF, Sync, Sound, Assembly, Complete, (Less Tubes)
	Printed Board	25-16-0	IF, Sync, Sound, Board Only (Less All Components)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	48-159-0	Models 1106, PC1106, 1107, PC1107
Safety Glass	48-144-0	Models 1118CH, PC118CH, 1118L, PC1118L, 1119CH, PC1119CH
Mask	40-18-4	23", Models 1114, PC1114, 1116, PC1116, 1160, PC1160, 1161, PC1161, 1162, PC1162, 1163, PC1163, 1164, PC1164, 1165, PC1165
Knob	52-1456-0	VHF Channel Selector, Models 1160, PC1160, 1161, PC1161, 1162, PC1162, 1163, PC1163, 1164, PC1164, 1165, PC1165
Knob	52-1405-0	VHF Channel Selector, Models 1106, PC 1106, 1107, PC1107
Knob	52-1430-0	VHF Channel Selector, Models 1118CH, PC1118CH, 1118L, PC1118L, 1119CH, PC1119CH
Knob	52-1412-0	UHF Channel Selector, Models 1107, PC1107
Knob	52-1444-0	UHF Channel Selector, Models 1119CH, PC1119CH
Knob	52-926-0	UHF Channel Selector, Models 1161, PC1161, 1163, PC1163, 1165, PC1165
Knob	52-924-0	UHF Channel Indicator, Models 1161, PC1161, 1163, PC1163, 1165, PC1165, 1119CH, PC1119CH
Knob	52-1404-0	UHF Channel Indicator, Models 1107, PC1107
Knob	52-1410-0	VHF Fine Tuning, Models 1106, PC1106, 1107, PC1107
Knob	52-1431-0	VHF Fine Tuning, Models 1118CH, PC1118CH, 1118L, PC1118L, 1119CH, PC1119CH
Knob	52-1406-0	Contrast, Volume, Models 1106, PC1106, 1107, PC1107
Knob	52-1409-0	Contrast, Volume, Models 1118CH, PC1118CH, 1118L, PC1118L, 1119CH, PC1119CH
Knob	52-1407-0	Contrast, Volume, Models 1114, PC1114, 1116, PC1116, 1160, PC1160, 1161, PC1161, 1162, PC1162, 1163, PC1163, 1164, PC1164, 1165, PC1165
Knob	52-1439-0	Brightness, Vertical Hold, Horizontal Hold, Model 1114, PC1114, 1116, PC1116, 1160, PC1160, 1161, PC1161, 1162, PC1162, 1163, PC1163, 1164, PC1164, 1165, PC1165
Knob	52-1411-0	Brightness, Vertical Hold, Models 118CH, PC1118CH, 1118L, PC1118L, 1119CH, PC1119CH
Cabinet	42-198-0	Front, Models 1106, 1107, PC1106, PC1107
Cabinet	21-700-0	Back, Models 1106, 1107, PC1106, PC1107
Cabinet	42-203-0	Masonite, Mahogany, Models 1114, PC1114
Cabinet	42-204-0	Masonite, Blond, Models 1116, PC1116
Cabinet	42-200-0	Models 1118CH, PC1118CH
Cabinet	42-218-0	Models 1119CH, PC1119CH
Cabinet	42-219-0	Models 1118L, PC1118L
Cabinet	42-226-0	Mahogany, Models 1160, PC1160, 1161, PC1161
Cabinet	42-227-0	Blond, Models 1162, PC1162, 1163, PC1163
Cabinet	42-228-0	Walnut, Models 1164, PC1164, 1165, PC1165
Leg	49-730	Mahogany, Models 1160, PC1160, 1161, PC1161
Leg	49-731	Blond, Models 1162, PC1162, 1163, PC1163
Leg	49-732	Walnut, Models 1164, PC1164, 1165, PC1165
Handle	49-716	Carrying, Models 1118CH, PC1118CH, 1119CH, PC1119CH
Handle	49-638	Carrying, Models 1118L, PC1118L
Handle	49-632	Carrying, Models 1106, PC1106, 1107, PC1107

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

UHF TUNER PARTS LIST AND DESCRIPTIONS 95–221–O

TUBES

• GENERAL ELECTRIC •			RAYTHEON •		SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE		
V301	Osc.	3AF4B					

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301	3.3	Pt. #5219-502						
C302	.91 10%	Pt. #2101-918						
C303	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C304	18 10%		DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C305		Pt. #1620-9						
C306	1.5 N470	Pt. #5258-503						
C307	15		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C308	15		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C309	1000		EF-001	MFT-1000		CCF-102	CT280A	
C310	1000		EF-001	MFT-1000		CCF-102	CT280A	
C311	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R301	820K	

ITEM No.	RATING	REMARKS
R302	150Ω	

ITEM No.	RATING	REMARKS
R303	6800Ω	

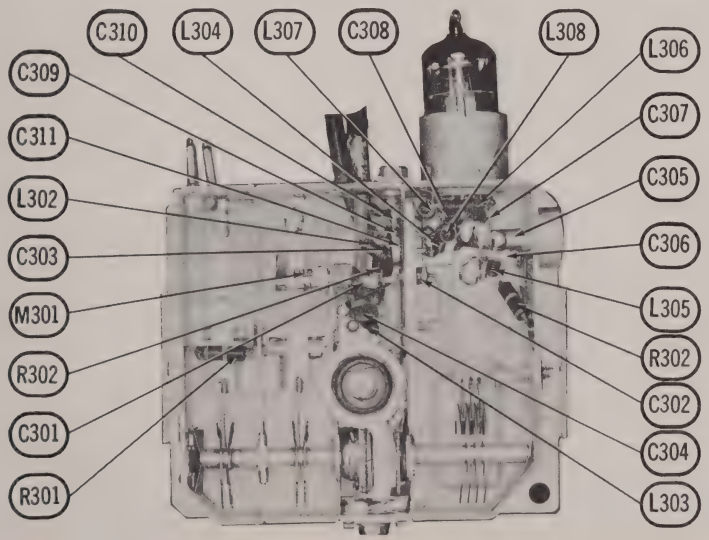
COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L301	Ant. Coils	5421-1	
L302	RF Choke	1785-13	
L303	UHF IF Output	2686-1	
L304	RF Choke	1785-13	

ITEM No.	USE	SILVERTONE PART No.	NOTES
L305	Osc. Coil	1785-9	
L306	RF Choke	1911-12	
L307	Fil. Choke	1785-70	
L308	Fil. Choke	1785-70	

SIGNAL DIODES

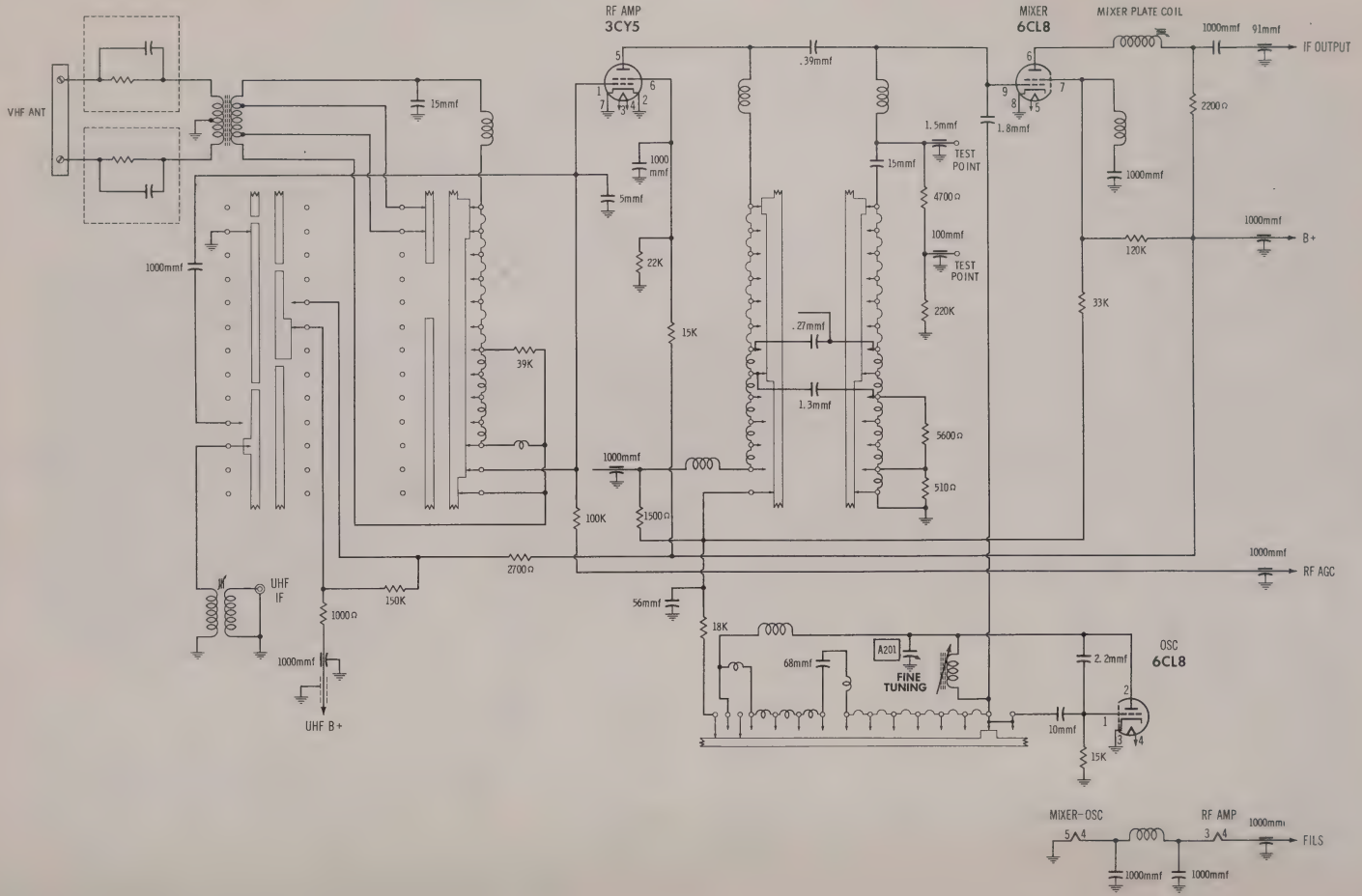
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M301	1N82A	1N82A		1N82A	1N82A	



UHF TUNER 95–221–O

SILVERTONE CHASSIS 456/528.51680, 681, 740, 741, 760, 761

FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF Provisions - 95-233-0

VHF TUNER 95-232-0
RF AMP
3CY5
MIXER
6CL8
MIXER PLATE COIL
OSC
6CL8
RF AMP
MIXER-OSC
IF OUTPUT
B+
RF AGC
FILS
VHF ANT
FINE TUNING
TEST POINT
TEST POINT
A20
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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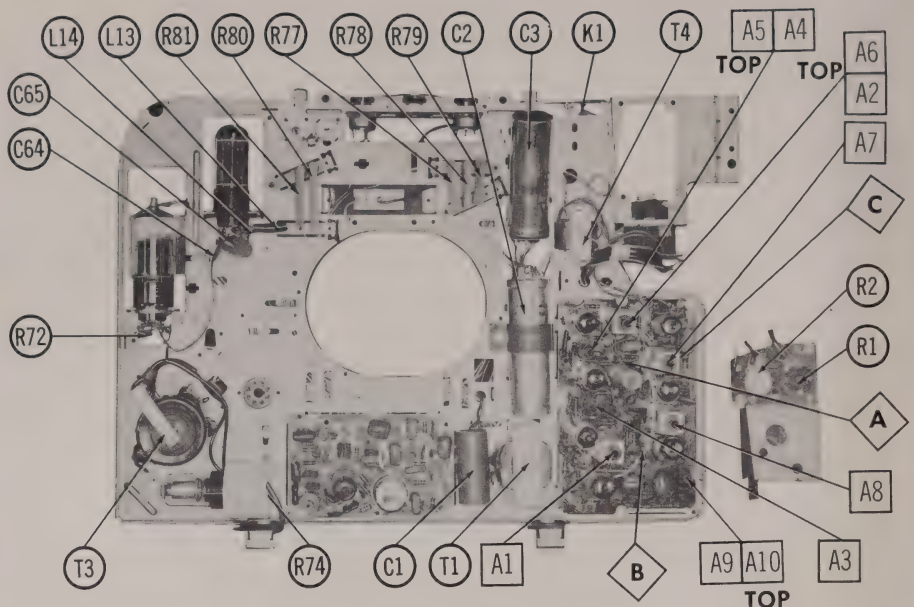
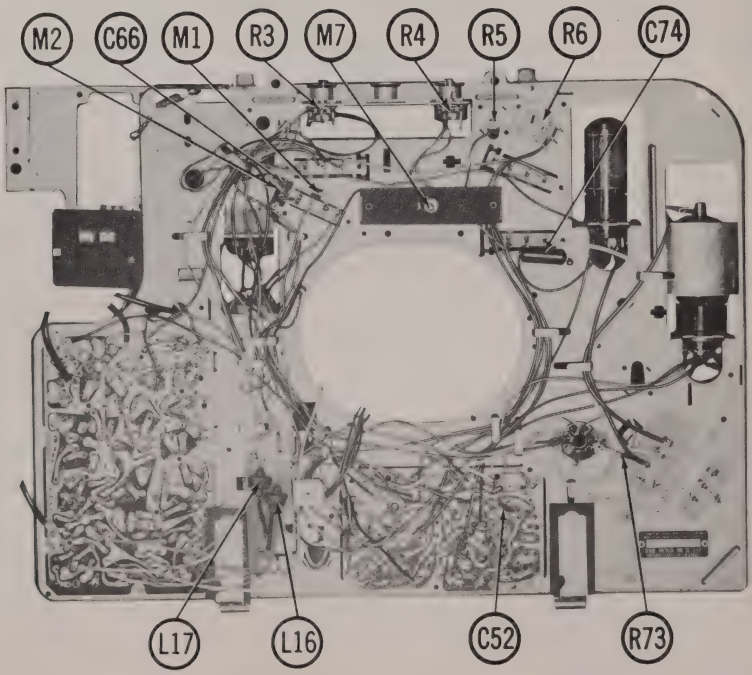
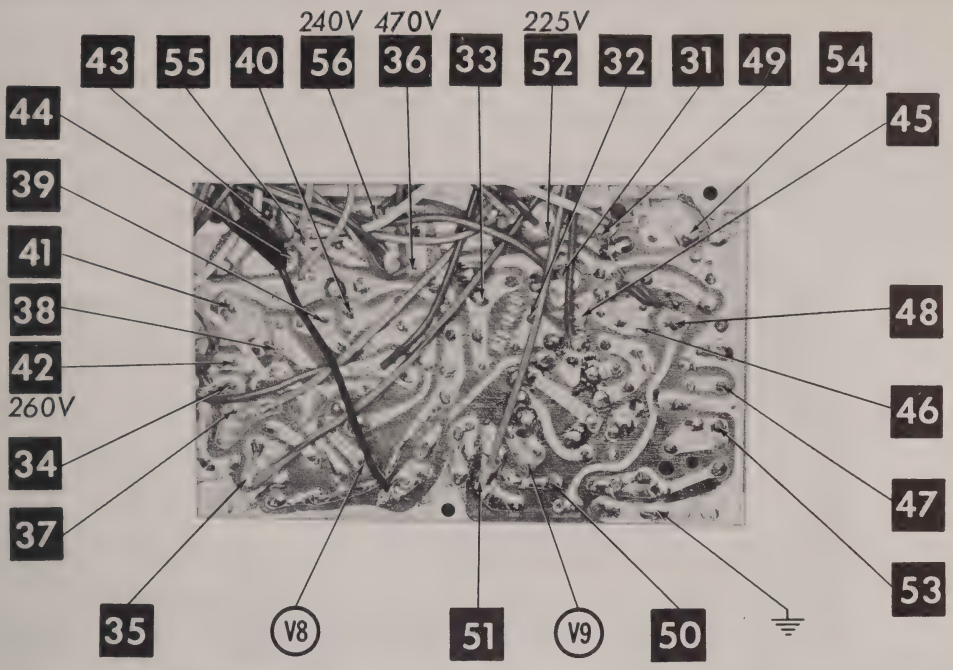


CHASSIS - FRONT VIEW



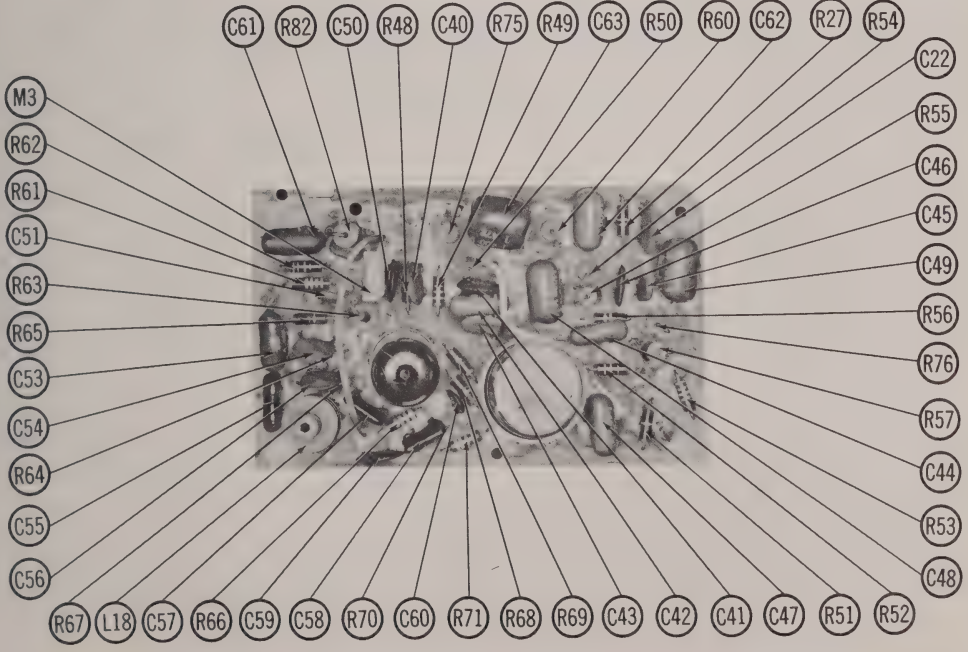
CHASSIS - REAR VIEW



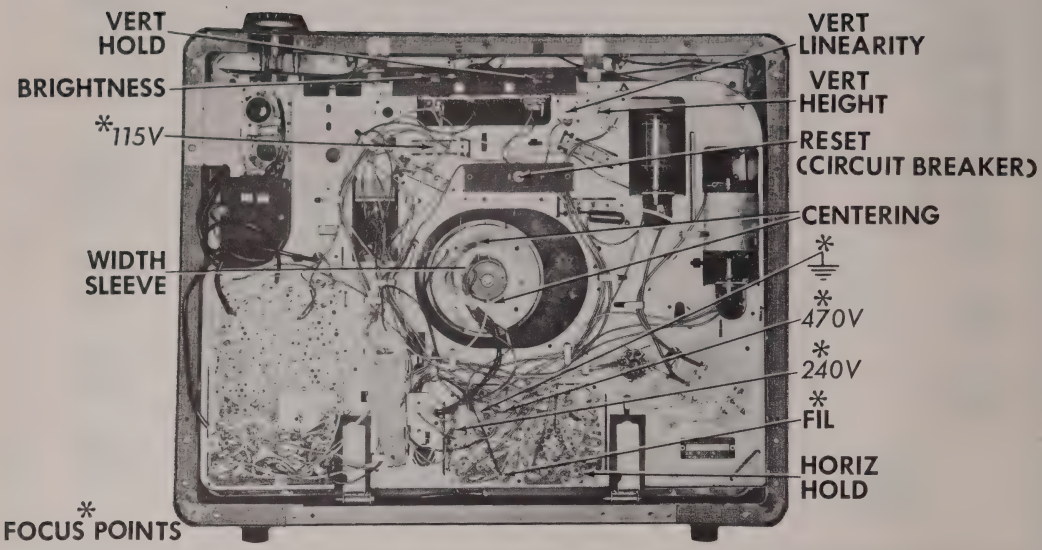
A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VERT., HORIZ. OSC. PRINTED BOARD



VERT., HORIZ. OSC. PRINTED BOARD



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS SERVICING AND TUBE REPLACEMENT

Chassis may be serviced by removing rear cover, knobs at top of cabinet, and 4 screws (2 at top of chassis and 2 at side of tuner mounting bracket). Chassis will now tilt back on hinges.

CHASSIS REMOVAL MODELS 1118CH, PC-1118CH

1. Remove 9 metal screws holding rear cover. Remove rear cover.
2. Remove 4 push-on type knobs at top of cabinet.
3. Remove 2 screws at top holding chassis.
4. Remove 2 screws at side holding tuner.
5. Remove high voltage lead, picture tube socket, and yoke plug.
6. Remove 2 bolts at bottom (1 to each hinge).
7. Remove chassis.

PICTURE TUBE REMOVAL

Tilt chassis back on hinges as in "Chassis Servicing and Tube Placement". Remove high voltage lead, picture tube socket, and yoke plug. Remove 2 screws at front (bottom) of mask. Pull top of mask out far enough to remove 2 springs (at top). Remove 4 screws at front of cabinet now visible. Pull picture tube out front.

PHOTOFACT® Folder

**ADMIRAL CHASSIS
5K5, 5K5A**

ADMIRAL CHASSIS
5K5, 5K5A

ADMIRAL CHASSIS
5K5, 5K5A

TRADE NAME	Admiral Models Y979 (Ch. 5K5A), Y1002, Y1009, Y1021, Y1022, Y1023, Y1041, Y1042, Y1043, Y1069 (Ch. 5K5); SS979, SS1041, SS1042, SS1043, SS1069 (External Speaker Unit)
MANUFACTURER	Admiral Sales Corp., Service Div., 903 Morrissey Drive, P. O. Box 845, Bloomington, Illinois
TYPE SET	AC Operated 5 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 72 Watts, .68 Amp. @117 Volts AC (Less Motor)

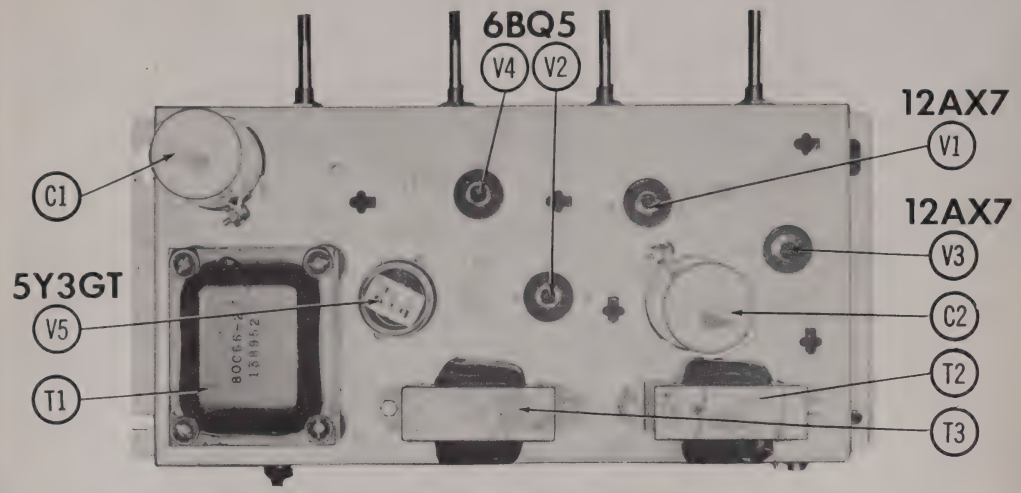
MODEL Y979 MAY USE RECORD CHANGER RC6E9J-18P, RC6E9K-18P OR RC6E9M-18P.
MODELS Y1002, Y1009, Y1021, Y1022 AND Y1023 MAY USE RECORD CHANGER RC6E9J-16Y, RC6E9K-16Y OR RC6E9M-16Y. MODELS Y1041, Y1042, Y1043 AND Y1069 MAY USE RECORD CHANGER RC6E9J-18Q, RC6E9K-18Q OR RC6E9M-18Q.
FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR ADMIRAL RC607 SERIES — PHOTOFACT SET 398 FOLDER 7 OR RECORD CHANGER MANUAL RC-11

SET 515 FOLDER 3

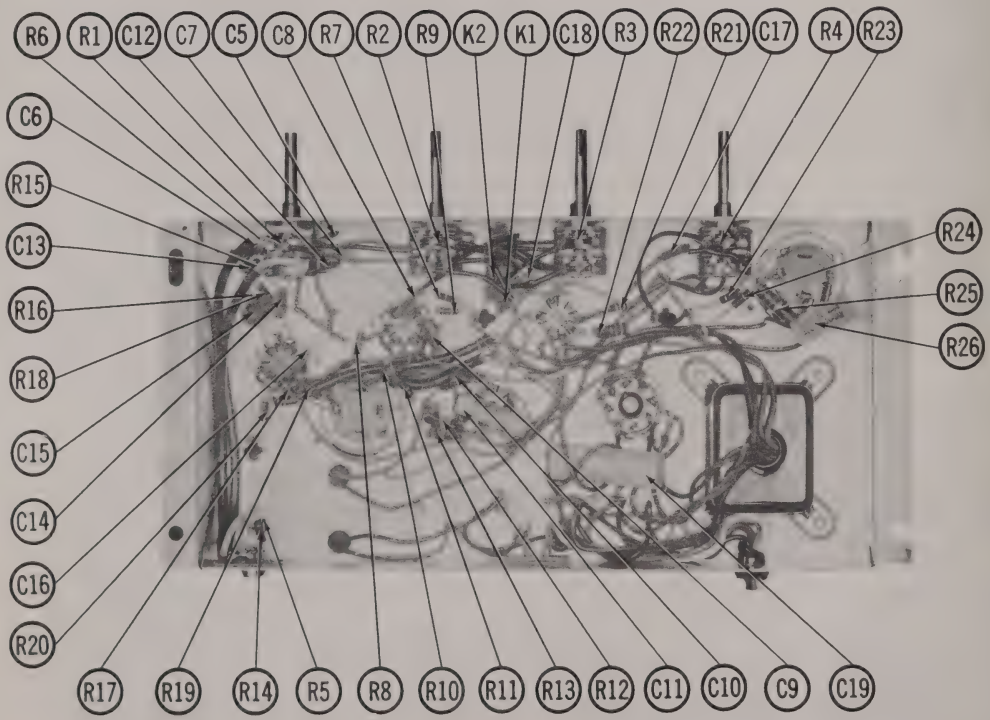
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT171

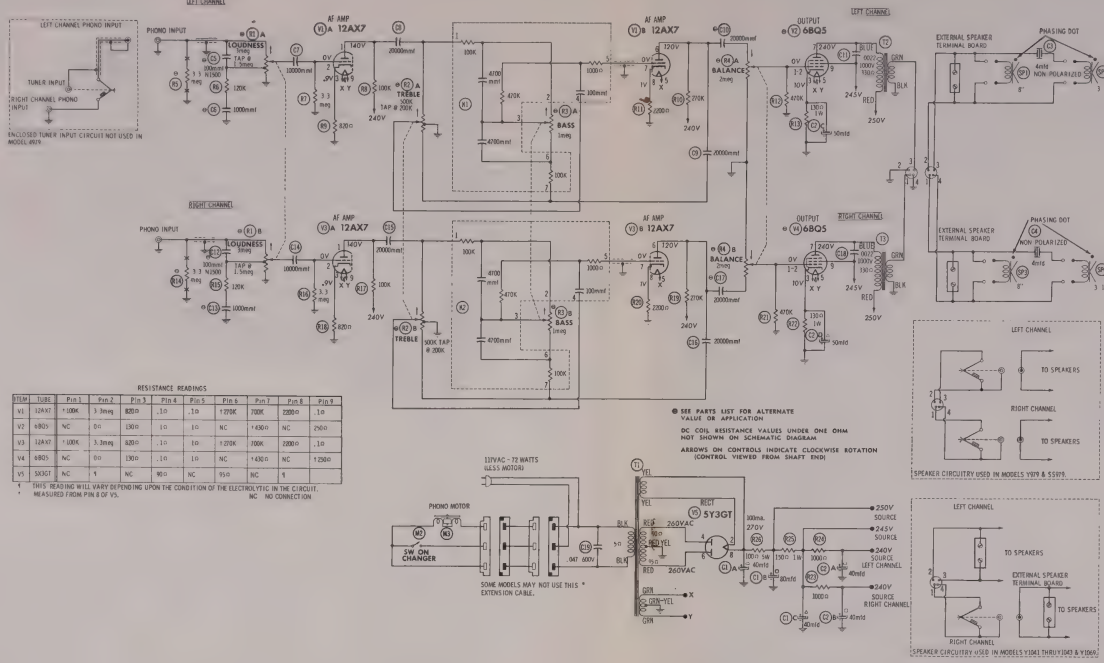
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†100K	3.3meg	820Ω	.1Ω	.1Ω	†270K	700K	2200Ω	.1Ω
V2	6BQ5	NC	0Ω	130Ω	1Ω	1Ω	NC	†430Ω	NC	250Ω
V3	12AX7	†100K	3.3meg	820Ω	.1Ω	.1Ω	†270K	700K	2200Ω	.1Ω
V4	6BQ5	NC	0Ω	130Ω	.1Ω	1Ω	NC	†430Ω	NC	†250Ω
V5	5Y3GT	NC	†	NC	95Ω	NC	95Ω	NC	†	

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 8 OF V5. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ADMIRAL CHASSIS 5K5, 5K5A

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp.	12AX7	V4	Right Channel Output	6BQ5 (EL84/6BQ5) *
V2	Left Channel Output	6BQ5 (EL84/6BQ5) *	V5	Rectifier	5Y3GT
V3	Right Channel AF Amp.	12AX7			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	67D7-37	AFH3-154-30	C0236	FP375.5	TMT-3441	TVL-3642	
B	■80	350							
C	▲40	350							
C2A	▲40	350	67D7-39	AFH4-53	D0034	FP420.38	TMQ-4652	TVL-2764	
B	■40	350						TVA-2453	
C	50	25							
D	▲50	25							
C3	4	10NP	64B13-5	PRS7405	BBR4-150	TCN504		TVANS-1150*	
C4	4	10NP	64B13-5	PRS7405	BBR4-150	TCN504		TVANS-1150*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	100 N1500	Note 1						
C6	1000	Note 2	DI-1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C8	20000		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C9	20000		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C10	20000	Note 3	BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C11	.0022 1000V		P1088N-0022	DD-222	CUB10D22	16DP-2-222	GEM-10222	10TM-D22
C12	100 N1500	Note 1						
C13	1000	Note 2	DI-1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	20000		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C16	20000		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C17	20000	Note 3	BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C18	.0022 1000V		P1088N-0022	DD-222	CUB10D22	16DP-2-222	GEM-10222	10TM-D22
C19	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Note 1. Run 10 uses 30mmf in this application (Part #65D6-154).
Note 2. Run 10 uses 20000mmf in this application (Part #65D10-137).
Note 3. Run 10 uses 5000mmf in this application (Part #65D10-152).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	75D46-11 ①				FA36DT155*	Loudness, Left Channel
	l. 5meg Tap							
B	3meg	½					RU36DT155*	Loudness, Right Channel
	l. 5meg Tap							
C	Shaft						SL-45	
R2A	500K	½	75D46-14 ②	ABT-65				Treble, Right Channel
	200K Tap							
B	500K	½		STR-65				Treble, Left Channel
	200K Tap							
C	Shaft			AK-8				
R3A	1meg	½	75D46-13 ③	AB-69	AD47-1meg-S		FA16L	Bass, Right Channel
B	1meg			SR-69	Not Req.		RU16L	Bass, Left Channel
C	Shaft			AK-8	RS 3/16		SL-45	
R4A	2meg	½	75D46-12 ④				FA26R	Balance, Right Channel
B	2meg						RU26A	Balance, Left Channel
C	Shaft						SL-45	

① Chassis 5K5A uses 3meg dual loudness (Part #75D46-16).
② Chassis 5K5A uses 500K dual treble (Part #75D46-19). Some versions may use Part #75D46-16.
③ Chassis 5K5A uses 1meg dual bass (Part #75D46-18).
④ Chassis 5K5A uses 2meg dual balance (Part #75D46-17).
* Use l. 5meg tap.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	3.3meg	Note 1
R6	120K	
R7	3.3meg	
R8	100K	
R9	820Ω	
R10	270K	
R11	2200Ω	
R12	470K	

ITEM No.	RATING	REMARKS
R13	130Ω 1W	
R14	3.3meg	Note 1
R15	120K	
R16	3.3meg	
R17	100K	
R18	820Ω	
R19	270K	
R20	2200Ω	

ITEM No.	RATING	REMARKS
R21	470K	
R22	130Ω 1W	
R23	1000Ω	
R24	1000Ω	
R25	150Ω 1W	
R26	100Ω 5W	IRC#PW5-100Ω

Note 1. Used in Run 10 of Chassis 5K5 only.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K1	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	63B14-1	Centralab	PC-190
				Sprague	TC-1
K2	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	63B14-1	Centralab	PC-190
				Sprague	TC-1

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ② .68A	520VCT .100A	5V ② 2A	80C66-2		PC-8405 ①			① Drill New Mounting Hole.
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ② 2.1A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω	3-4Ω	79D33-27	A-2935	A-3824	22S88	S-5X	
T3	6200Ω	3-4Ω	79D33-27	A-2935	A-3824	22S88	S-5X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	78C151-3	8A31	
SP2	3½"	PM	3-4Ω	78C148-1	3A15TZ4.4	
SP3	8"	PM	3-4Ω	78C151-3	8A31	
SP4	3½"	PM	3-4Ω	78C148-1	3A15TZ4.4	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	ADMIRAL PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	409B33-1-1 (Note 1)	98C15-101* (78RPM) and 98C15-100* (LP) or 98C15-102* (LP)	13TB	Not Req.	26S	S3-3 * and S1-1 *	8TA4-S	N-8TA-S *	Note 1. For Changer Model Numbers Ending With — 16Y. Note 2. For Changer Model Numbers Ending With — 18P or — 18Q.
	409C34-1-1 (Note 2)	98C95-8* or 98C95-9*	13TB	Not Req.	26S	S1-1 * and S3-3*	8TA4-S	N-8TA-S *	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	Switch	408A-1	Off-On-Reject (Part of Changer)
M3	Motor	407C-28	Phono Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	700A208-1	Models Y979, Y1002, Y1009, Y1021, Y1022, Y1023
Knob	700A208-3	Models Y1041, Y1042, Y1043, Y1069
Cabinet	35E568-1	Gray And Charcoal, Model Y979
Cabinet	35E569-1	Gray And Charcoal, Model SS979
Cabinet	35E547-1	Wainut, Model Y1041
Cabinet	35E547-2	Mahogany, Model Y1042
Cabinet	35E547-3	Blond, Model Y1043

CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Cabinet	35E558-9	Fruitwood, Model Y1069
Cabinet	35E548-1	Walnut, Model SS1041
Cabinet	35E548-2	Mahogany, Model SS1042
Cabinet	35E548-3	Blond, Model SS1043
Cabinet	35E576-9	Fruitwood, Model SS1069
Cabinet	35E539-2	Mahogany, Model Y1002
Cabinet	35E539-9	Fruitwood, Model Y1009
Cabinet	35E546-1	Walnut, Model Y1021
Cabinet	35E546-2	Mahogany, Model Y1022
Cabinet	35E546-3	Blond, Model Y1023
Leg	37D168-79	Walnut, Models Y1041, SS1041
Leg	37D168-52	Mahogany, Models Y1042, SS1042
Leg	37D168-53	Blond, Models Y1043, SS1043

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

AIRLINE MODELS GEN-2030A, B

AIRLINE MODELS
GEN-2030A, B

AIRLINE MODELS
GEN-2030A, B

TRADE NAME	Airline Models GEN-2030A, GEN-2030B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	9 Volts DC RATING 12MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE	BROADCAST 537-1600KC 15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 ... GENERAL CEMENT #5097, 8727
WALSCO #2515
A4, A6 ..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A5 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.	Loop	1640KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	537KC	Tuning gang fully closed	"	A5	"
4.	"	1400KC	1400KC	"	A6	"
5.	"	600KC	600KC	"	A7	Adjust for maximum output. Repeat steps 2 thru 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

EIA

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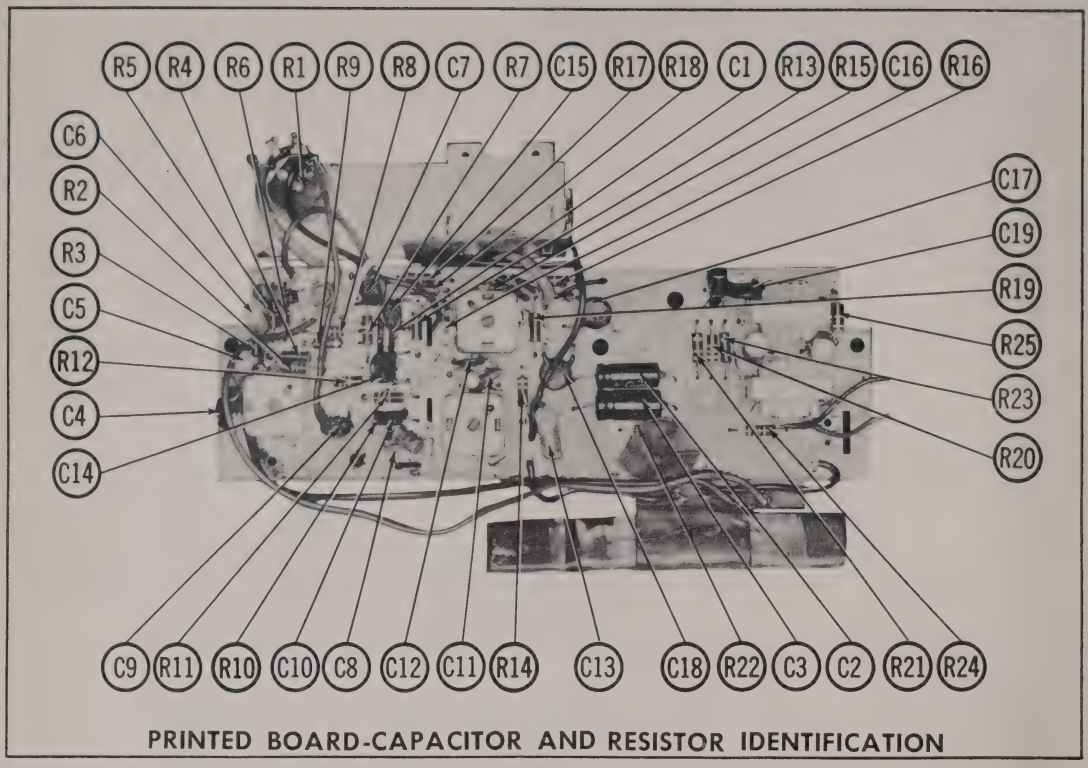
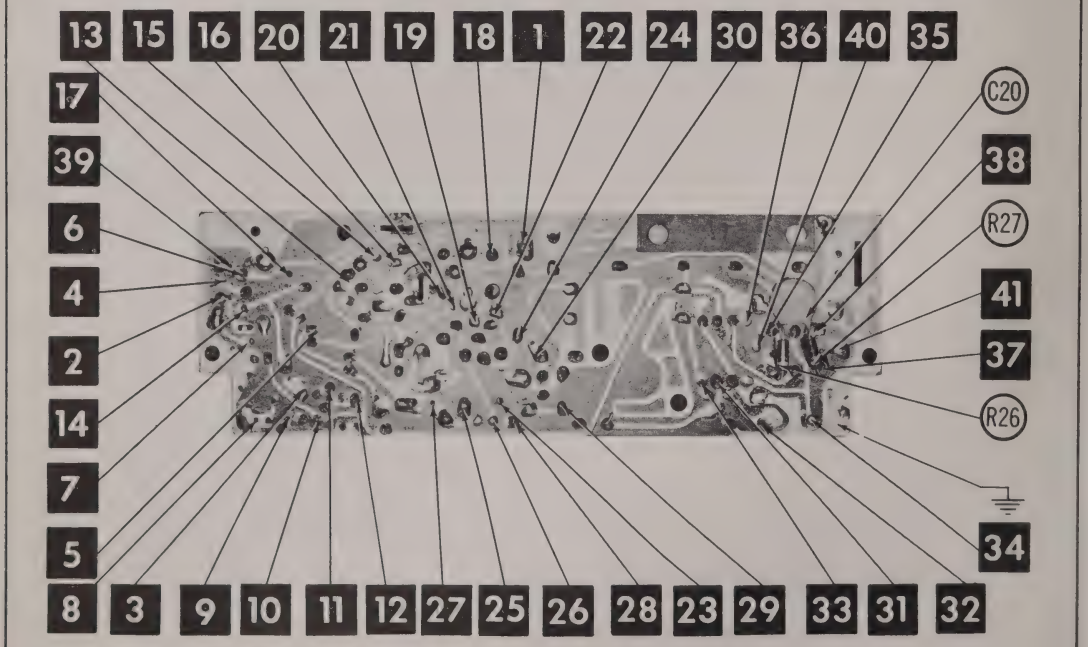
KG288

SET 515 FOLDER 4



PRINTED BOARD-CAPACITOR AND RESISTOR IDENTIFICATION



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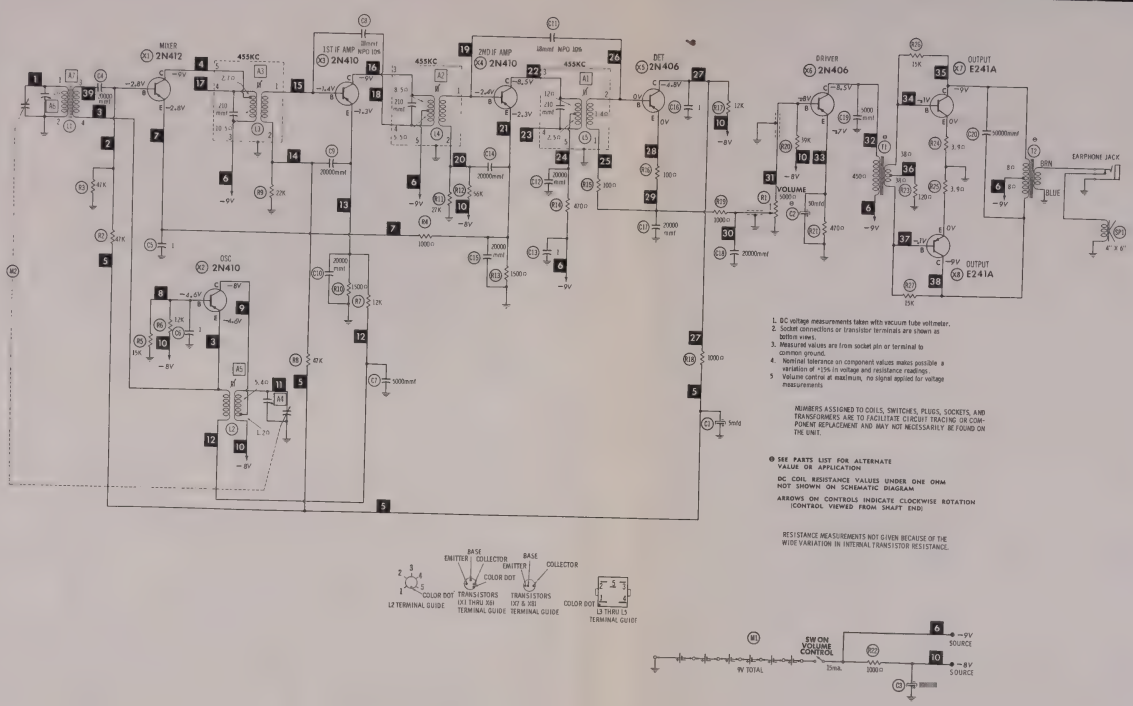
PRINTED BOARD


MIXER
X1 2N412
455KC
1ST I.F. AMP.
X3 2N410
2ND I.F. AMP
X4 2N410
DET.
X5 2N406
DRIVER
X6 2N406
OUTPUT
X7 E241A
OUTPUT
X8 E241A
OSC
X2 2N410
VOLUME
EARPHONE JACK
BRN
BLUE
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
BASE
EMITTER
COLLECTOR
COLOR DOT
L2 TERMINAL GUIDE
TRANSISTORS
IX1 THRU X61
TERMINAL GUIDE
TRANSISTORS
IX7 & X81
TERMINAL GUIDE
L3 THRU L5
TERMINAL GUIDE
SW ON VOLUME CONTROL
9V TOTAL
15mA.
-9V SOURCE
-8V SOURCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
from CIRCUITRACE

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AIRLINE MODELS GEN-2030A, B

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	Mixer	2N412	2N487	2N412	PNP
X2	2N410	Oscillator	2N410	2N482	2N410	PNP
X3	2N410	1st IF Amplifier	2N410	2N482	2N410	PNP
X4	2N410	2nd IF Amplifier	2N410	2N482	2N410	PNP
X5	2N406	Detector	2N406	2N633	2N406	PNP
X6	2N406	Driver	2N406	2N633	2N406	PNP
X7	E241A	Output	2N270			PNP) Matched
X8	E241A	Output	2N270			PNP) Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	10	E3227	XPP-10005	NLW5-15	TT12X5	ML5-15	TE-1127	
C2	50	10		XPP-10050	NLW50-10	TT10X50	ML50-12	TE-1119	Note 1
C3	100	10	E3215	PWE10100	NLW100-10	TT15X100	ML100-12	TE-1119.3	

Note 1. Some versions may use 50mfd @ 3V in this application (Part #E3226).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C5	.1	100V		P285N-1		WMF1P1E	1DP-2-104	GEM-201	2WF-P10
C6	.1	100V		P285N-1		WMF1P1E	1DP-2-104	GEM-201	2WF-P10
C7	5000			BPD-005	DDM-502	H-05D5	CCD-502	GP250	5HK-D50
C8	10	NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C9	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C10	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C11	18	NPO 10%			TCZ-18	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C12	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C13	.1	100V		P285N-1		WMF1P1E	1DP-2-104	GEM-201	2WF-P10
C14	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP-120	5HK-S20
C15	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP-120	5HK-S20
C16	.1	100V		P285N-1		WMF1P1E	1DP-2-104	GEM-201	2WF-P10
C17	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C18	20000	50V		BPD-02	DDM-203	H-05S2	CCD-203	GP120	5HK-S20
C19	5000			BPD-005	DDM-502	H-05D5	CCD-502	GP250	5HK-D50
C20	50000	50V		BPD-05	DDA-503	H-05S5		GP150	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5000Ω	1/2	E2543	B-11	A47-5000-S	Q13-114	U12	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	47K	
R3	47K	
R4	1000Ω	
R5	15K	
R6	12K	
R7	12K	
R8	47K	
R9	22K	
R10	1500Ω	

ITEM No.	RATING	REMARKS
R11	27K	
R12	56K	
R13	1500Ω	
R14	470Ω	
R15	100Ω	
R16	100Ω	
R17	12K	
R18	1000Ω	
R19	1000Ω	

ITEM No.	RATING	REMARKS
R20	39K	
R21	470Ω	
R22	1000Ω	
R23	120Ω	
R24	3.9Ω	
R25	3.9Ω	
R26	15K	
R27	15K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	E6028				
L2	Osc. Coil	E6138				
L3	1st IF Trans.	E6221				
L4	2nd IF Trans.	E6222				
L5	3rd IF Trans.	E6223				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	E1122B3 ①					① Alternate Part #E1122.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	500Ω CT	3-4Ω	E1128B2 ①					① Alternate Part #E1128.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	E1049		

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	62-63 *		230 *		A-100 *		M-13R *	* 6 Required.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Tuning Cap. Printed Board	E3524 E5628	2 Gang Ant. 22-243mmf, Osc. 11-107mmf

CABINETS & CABINET PARTS

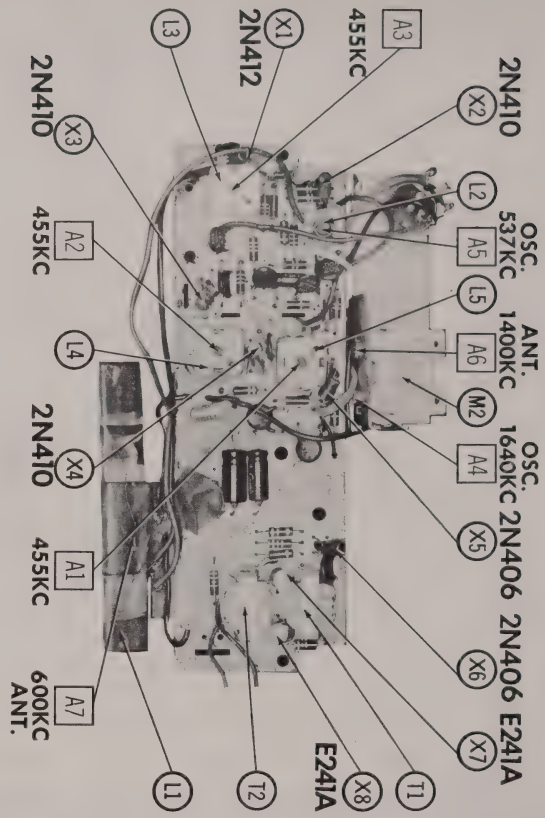
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E5098	Tuning
Knob	E5097	Volume
Cabinet	E7060	Outer Case, Oyster White
Cabinet	E7061	Front, With Lens, Oyster White

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



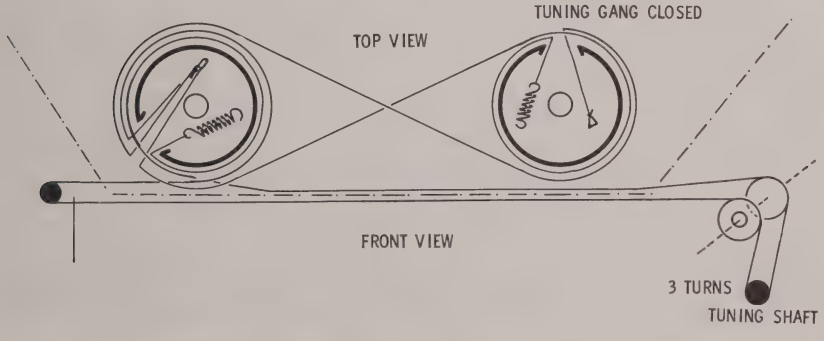
PHOTOFACT® Folder with CIRCUITRACE®

AIRLINE MODEL GTM-1200A

AIRLINE MODEL GTM-1200A

TRADE NAME	Airline Model GTM-1200A		
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	9 Volts DC	RATING	11MA@9 Volts DC (No Signal, Min. Volume) 20MA@9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 — 1600KC	SHORT WAVE	2.4 — 6.5MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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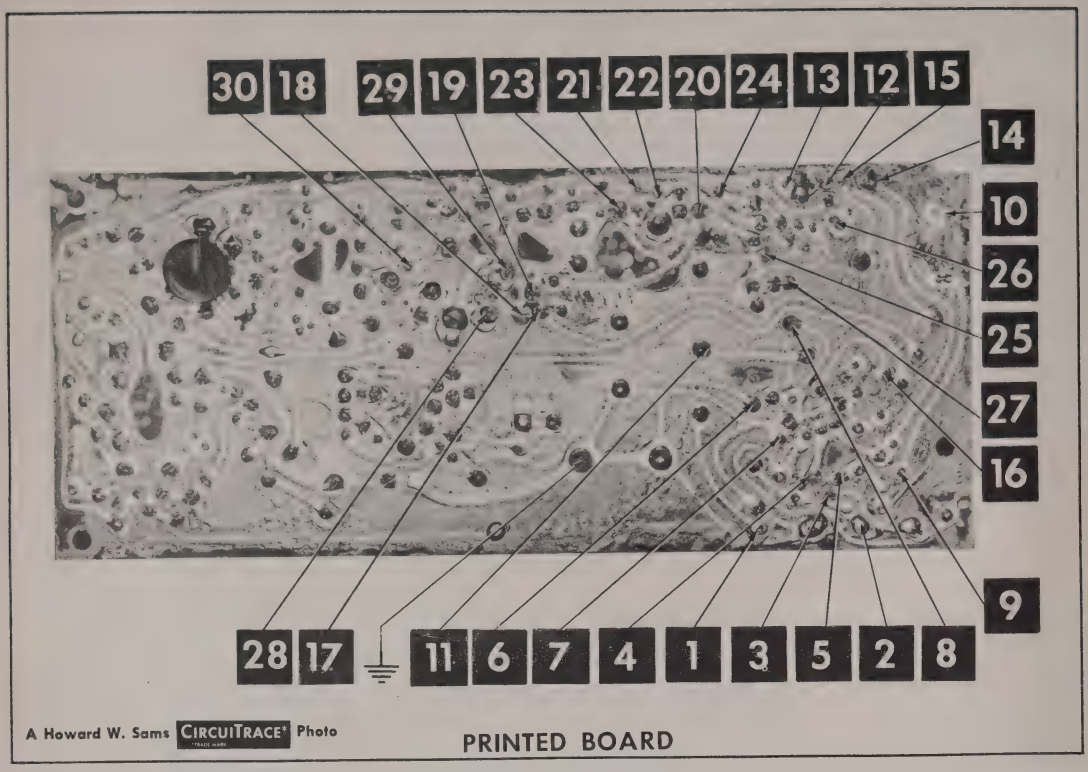
KF222

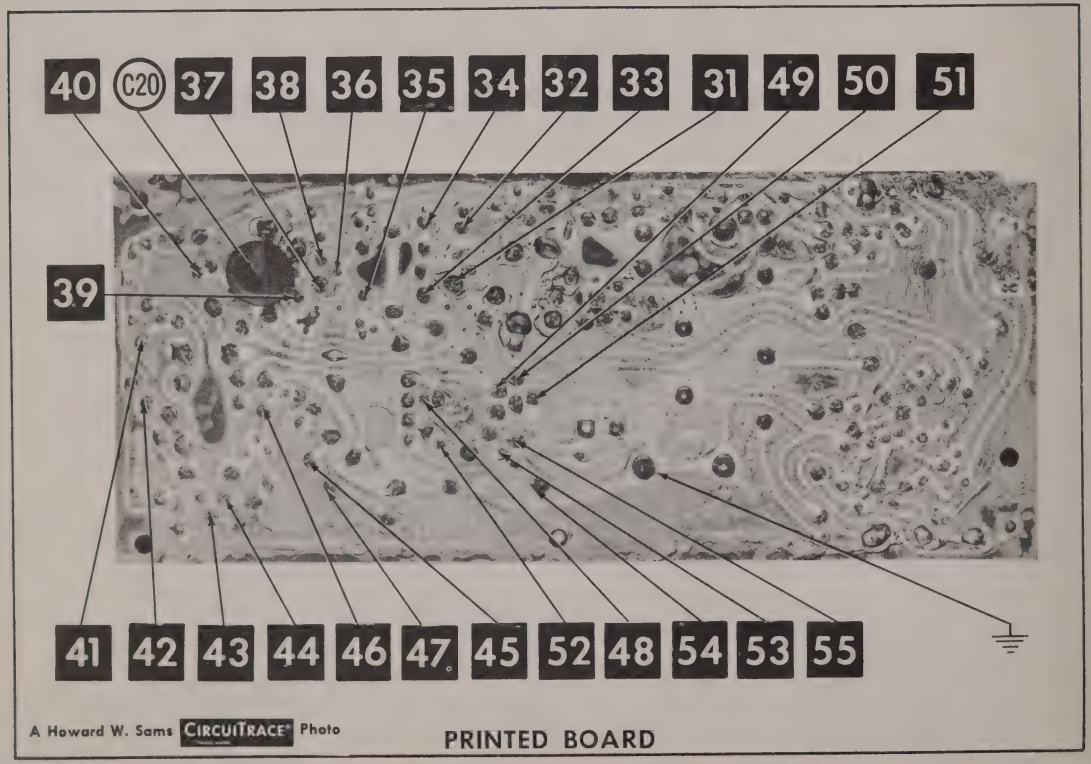
DATE 1-61 SET 515 FOLDER 5

SET 515 FOLDER 5



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



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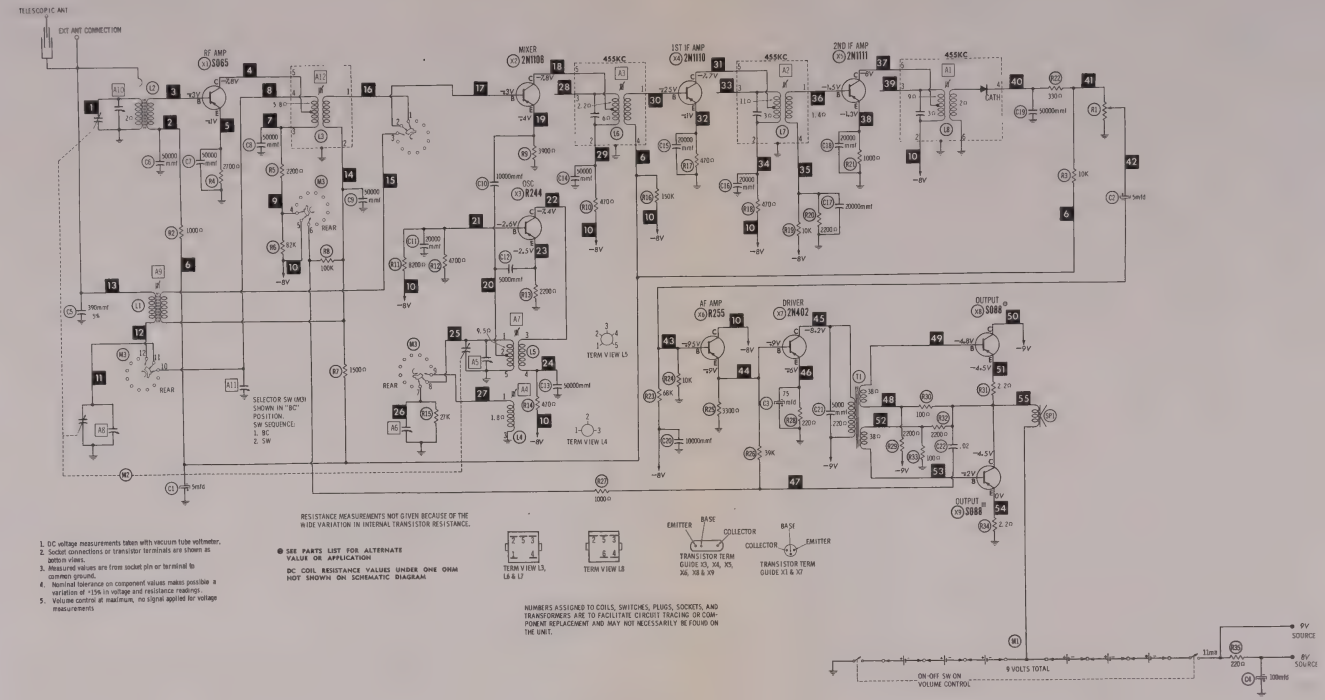

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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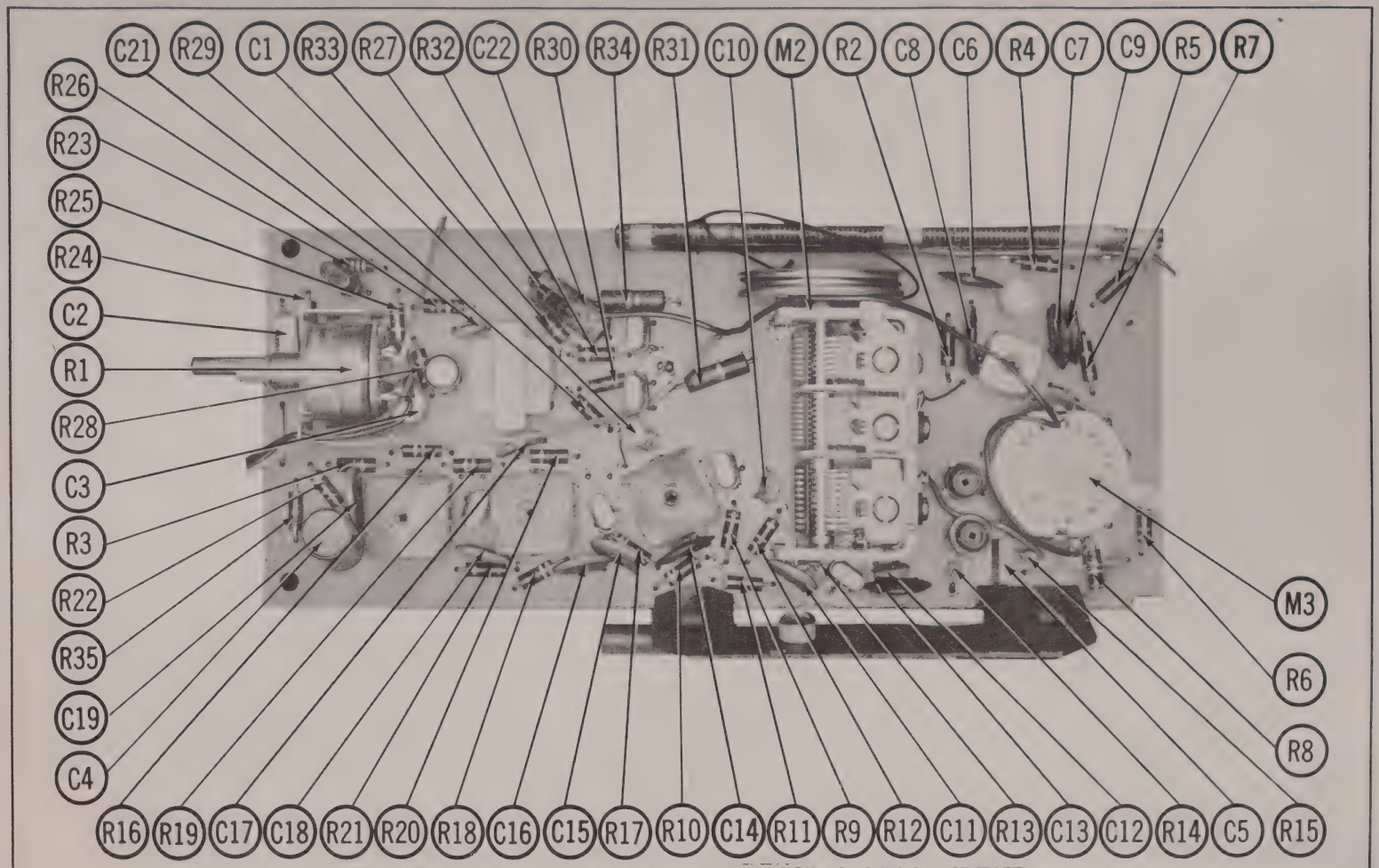
AIRLINE MODEL GTM-1200A



CHASSIS TOP VIEW-CAPACITOR, RESISTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A4, A7, A12.. GENERAL CEMENT #9440
A5, A6, A8, A10, A11.... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A9..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to base of Mixer. Low side to chassis.	455KC (400∿ Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	6.5MC	(SW) Tuning gang fully open.	"	A4	Turn A5 fully clockwise then back off ½ turn. Adjust A4 for maximum output.
3.	Tune signal generator to 7.41 MC and increase generator output until image is heard. If not heard, the oscillator is tuned to low side of the incoming signal and A4 must be rotated counterclockwise until image signal is heard.					
4.	High side thru .01mfd to base of Mixer. Low side to chassis.	6.5MC	(SW) Tuning gang fully open.	Across Voice coil.	A5	Adjust for maximum output.
5.	"	2.4MC	(SW) Tuning gang fully closed.	"		Retouch A4 for maximum output. Repeat Steps 4 and 5.
6.	"	1625KC	(BC) Tuning gang fully open.	"	A6	Adjust for maximum output.
7.	"	530KC	(BC) Tuning gang fully closed.	"	A7	Adjust for maximum output. Repeat Steps 6 and 7.
8.	High side thru 15mmf to external antenna lead. Low side to chassis.	5.8MC	(SW) 5.8MC Signal.	"	A8	Adjust for maximum output.
9.	"	2.6MC	(SW) 2.6MC	"	A9	Adjust for maximum output. Repeat Steps 8 and 9.
10.	Loop	1400KC	(BC) 1400KC Signal.	"	A10, A11	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
11.	"	600KC	(BC) 600KC Signal.	"	A12	Adjust for maximum output. Repeat Step 10.

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	S065	RF Amplifier				PNP
X2	2N1108	Mixer		2N486	2N412	PNP
X3	R244	Oscillator				PNP
X4	2N1110	1st IF Amplifier		2N483	2N409	PNP
X5	2N1111	2nd IF Amplifier		2N483	2N409	PNP
X6	R255	AF Amplifier				PNP
X7	2N402	Driver	2N408	2N362	2N217	PNP
X8	S088 *	Output	2N408			PNP \ Matched
X9	S088 *	Output	2N408			PNP / Pair

* Alternate Types 10036, 10037, 10038, 10039.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	5	3	218V012H19	PWE3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C2	5	3	218V012H19	PWE3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C3	75	3	218V012H17	PWE3100	NLW100-6	TT6X80	ML75-3	TE-1059	
C4	100	10	218V012H20	BCD10100	ECPB417	PET1400	ML100-15	VL-1140	

FIXED CAPACITORS

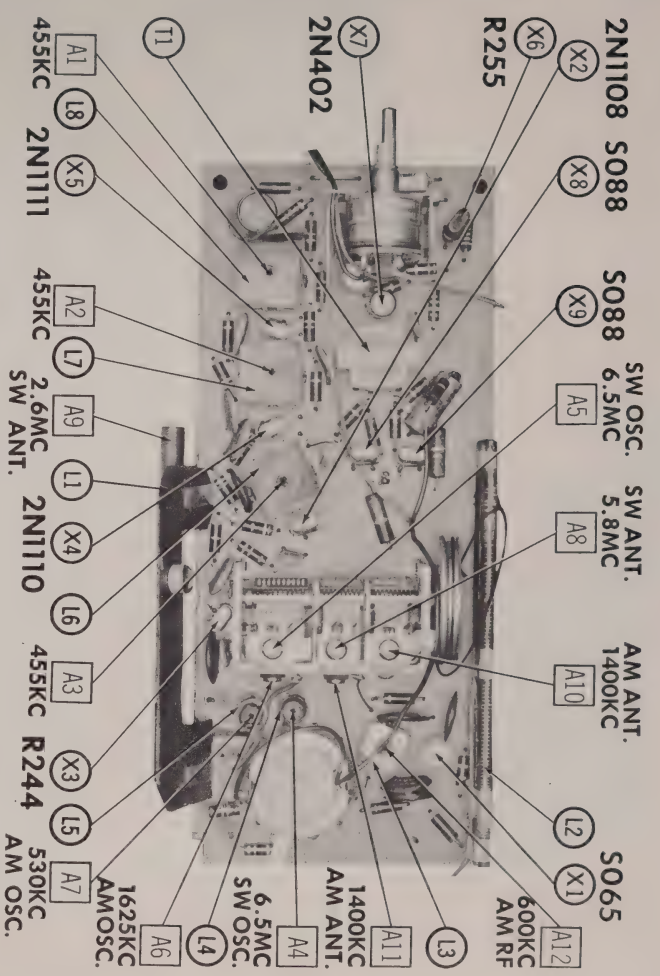
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	390 5%		1469-00039		5T5T39	CM-19B-391J		MS-339
C6	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C7	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C8	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C9	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C14	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C15	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C19	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GPI50	5HK-S50
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	2500Ω Switch	½	270V027H15					Volume Power Off-On

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	10K	
R4	2700Ω	
R5	2200Ω	
R6	82K	
R7	1500Ω	
R8	100K	
R9	3900Ω	
R10	470Ω	
R11	8200Ω	
R12	4700Ω	
R13	2200Ω	

ITEM No.	RATING	REMARKS
R14	470Ω	
R15	27K	
R16	150K	
R17	470Ω	
R18	470Ω	
R19	10K	
R20	2200Ω	
R21	1000Ω	
R22	330Ω	
R23	68K	
R24	10K	
R25	3300Ω	

ITEM No.	RATING	REMARKS
R26	39K	
R27	1000Ω	
R28	220Ω	
R29	2200Ω	
R30	100Ω	
R31	2. 2Ω	
R32	2200Ω	
R33	100Ω	
R34	2. 2Ω	
R35	220Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	SW Loopstick	310V053H01				
L2	BC Loopstick	310V052H01				
L3	RF Trans.	235V050H01				
L4	SW Osc. Coil	230V078H01				
L5	BC Osc. Coil	230V077H01				
L6	1st IF Amp.	235V051H02				
L7	2nd IF Trans.	235V051H01				
L8	3rd IF Trans.	235V052H01				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	1	430V076H01					
		SEC. 2						
		1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	4"	PM	25-30Ω	570V065H01	4A1Z27	

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1. 5V			230 *		A-100 *		M-13R *	* 6 Required

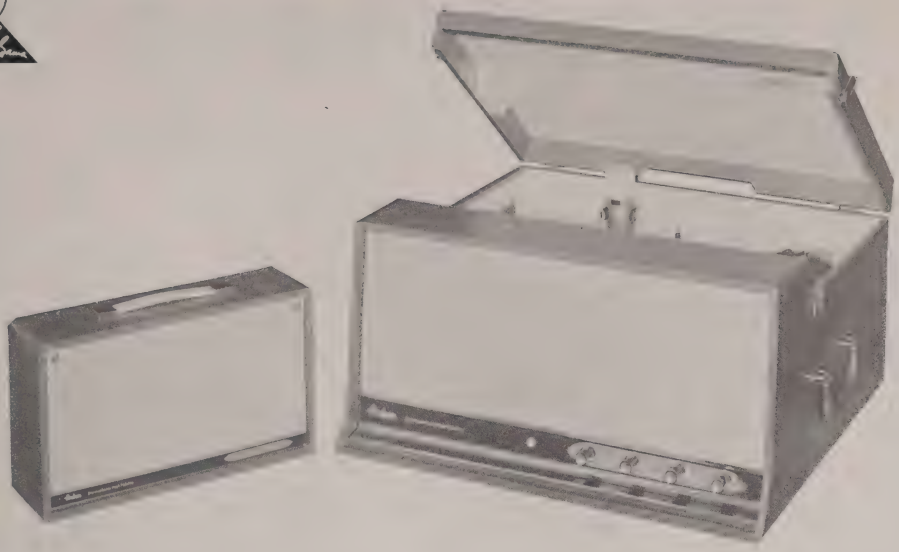
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Tuning Cap.	330V028H01	3 Gang
M3	Switch	756V038H01	Band Selector
	Antenna	318V005H01	Telescoping

PHOTOFACT® Folder

ANDREA MODEL PP-A3S

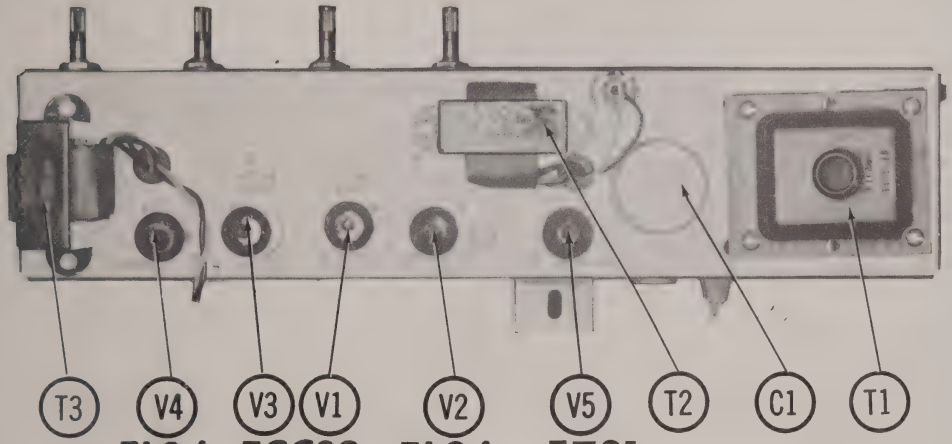
ANDREA MODEL
PP-A3S



TRADE NAME	Andrea Model PP-A3S (Compact)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City 1, N. Y.
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 72 Watts, .88 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

ANDREA MODEL
PP-A3S



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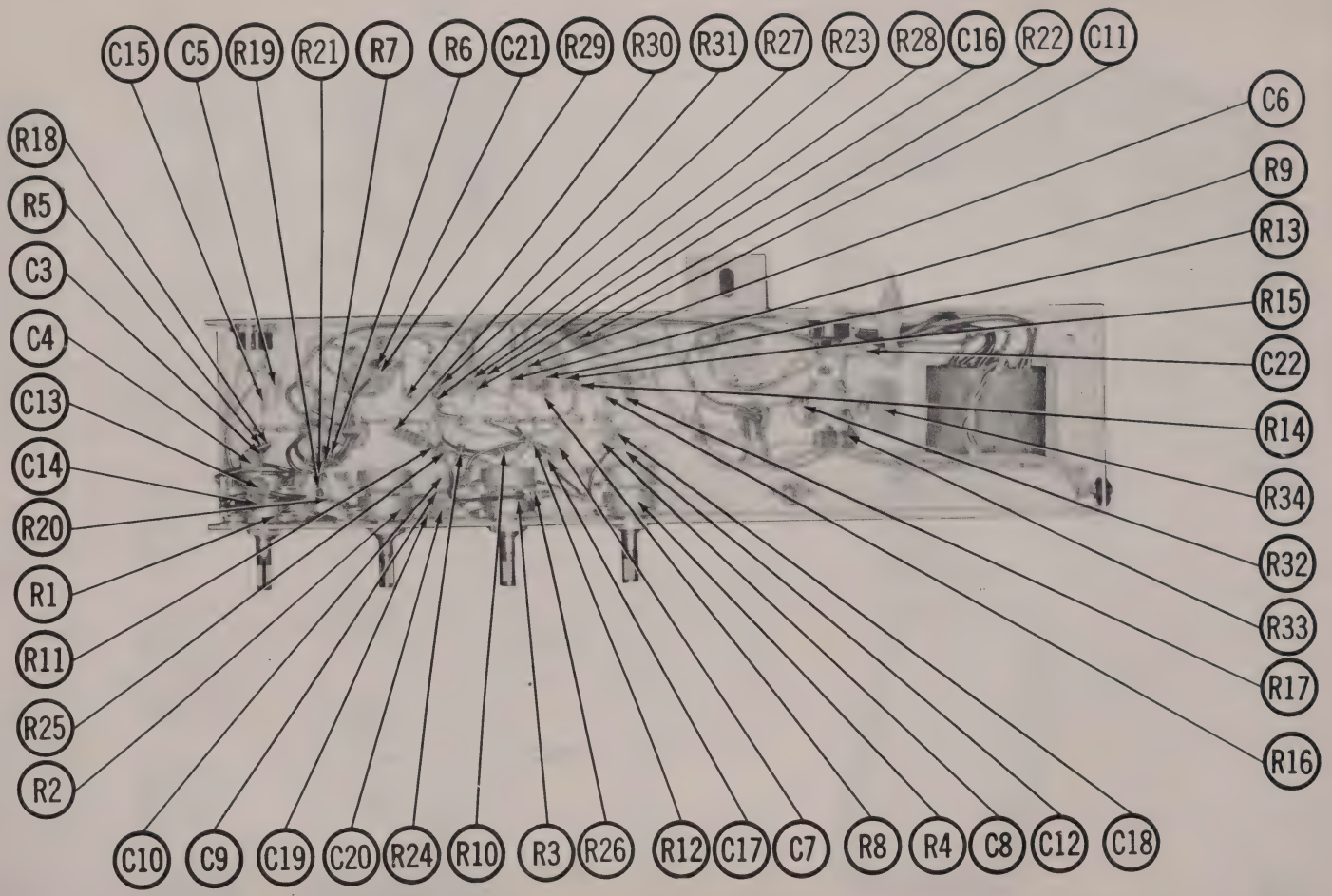
KT112

SET 515 FOLDER 6



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Left Channel AF Amp.	ECC83/12AX7
V2	Left Channel Output	EL84/6BQ5
V3	Right Channel AF Amp.	ECC83/12AX7
V4	Right Channel Output	EL84/6BQ5
V5	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	HCE-1363	AFH4-04-50	D0034	FP420.38	TMQ-4652	TVL-4635.3	
B	■40	350							
C	▲40	350							
D	40	350							
C2	6	10NP	HCE-1343	PRS6200	BBR8-150	TCN106		TVANS-1111 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330 *	CN7-433	10TC U-Q33
C4	47 N470							
C5	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C7	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C8	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C9	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C10	.01 100V 10%		V84C2S1-10%		PM4S1	DP-1-103	GEM-1611	4TM-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.03 200V 10%		V84C4S3-10%		PM6S3	4DP-2-303	GEM-1613	4TM-S30
C13	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330 *	CN7-433	10TC U-Q33
C14	47 N470							
C15	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C18	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C19	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C20	.01 100V 10%		V84C2S1-10%		PM4S1	DP-1-103	GEM-1611	4TM-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ANDREA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg *		GRV-878	BT-175				Loudness, Right Channel
B	2meg *			STR-175				Loudness, Left Channel
R2A	500K		GRV-880	B-59	AD47-500K-S		FA55L	Balance, Right Channel
B	500K			SR-59	Not Req.		RU55L	Balance, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg		GRV-879	B-70	AD47-1meg-Z		FA16A	Bass, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	1meg		GRV-879	B-70	AD47-1meg-Z		FA16A	Treble, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Treble, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	

* Taps @ 500K & 1meg.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	33K	
R6	15K	
R7	270K	
R8	100K	
R9	1500Ω	
R10	220K	
R11	33K	
R12	47K	
R13	220K	
R14	1500Ω	

ITEM No.	RATING	REMARKS
R15	18K	
R16	220K	
R17	150Ω 1W	
R18	33K	
R19	560K	(820K) *
R20	15K	
R21	270K	
R22	100K	
R23	1500Ω	
R24	220K	

ITEM No.	RATING	REMARKS
R25	33K	
R26	47K	
R27	220K	
R28	1500Ω	
R29	18K	
R30	220K	
R31	150Ω 1W	
R32	22K	
R33	1500Ω 2W	
R34	150Ω 5W	IRC #PW5-150Ω

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .88A	480VCT @ .100A	6.3VCT @ 3.1A	ST-3111					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4800Ω	3-4Ω	ST-3112	A-3019	A-8092	26S49	S-53X	
T3	4800Ω	3-4Ω	ST-3112	A-3019	A-8092	26S49	S-53X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ANDREA PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SL-4046	6A15R	
SP2	4"	PM	3-4Ω	SL-4047	4A15	
SP3	6"	PM	6-8Ω	SL-4045	6A15RZ6.2	
SP4	4"x 6"	PM	6-8Ω	SK-4048	46A07Z6.4	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	ANDREA PART No. CARTRIDGE	ANDREA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1	FM-5610	*FM-5610-1	13T	Not Req.	13	Not Req.	10T2-S	Not Req.	

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M2	Motor		Phono Drive (Part of Changer)
M3	Switch		Off-On-Reject (Part of Changer)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

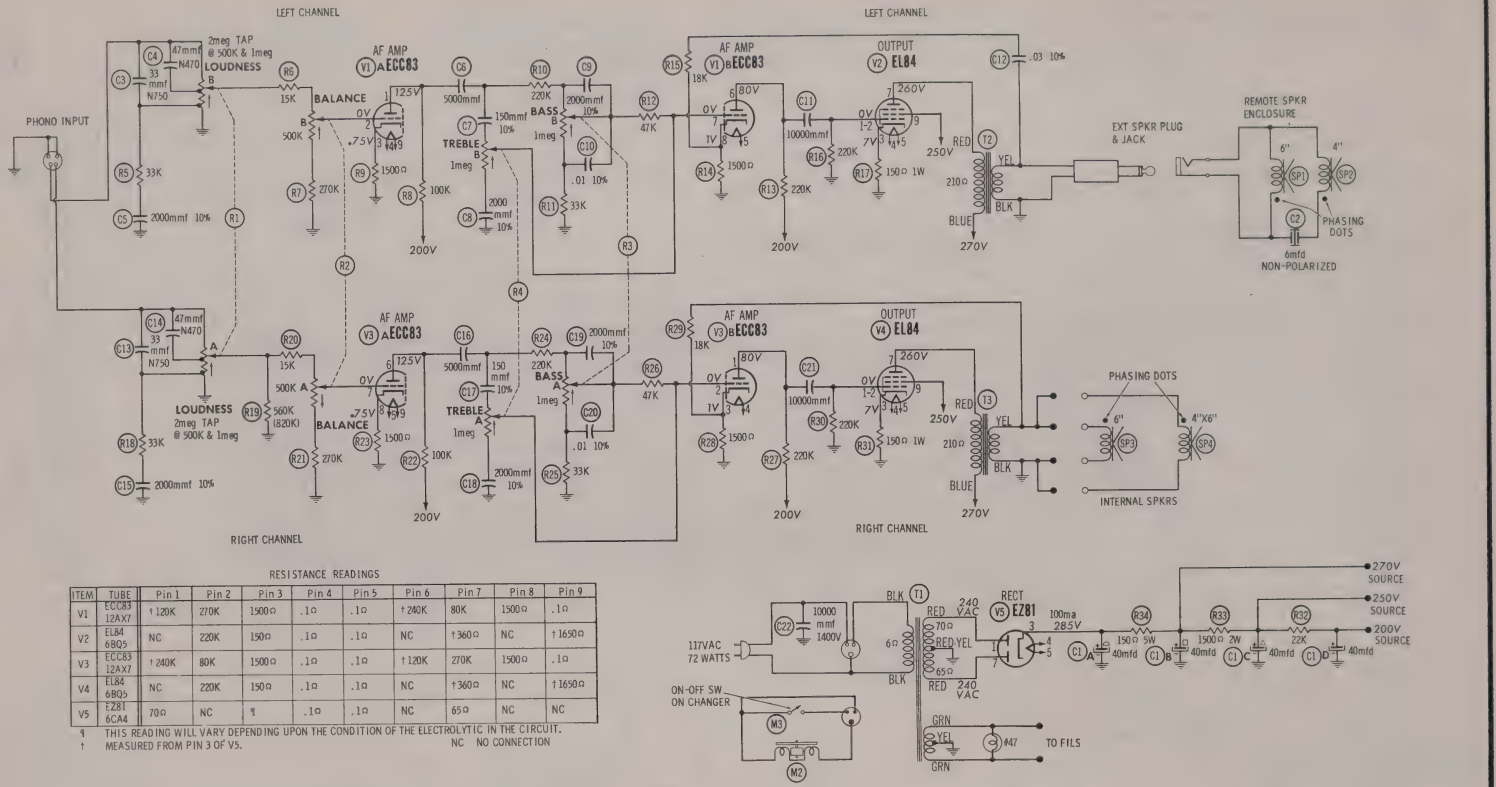
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

FOLDER 6

ANDREA MODEL PP-A35



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†120K	270K	1500Ω	.1Ω	.1Ω	†240K	80K	1500Ω	.1Ω
V2	EL84 6BQ5	NC	220K	150Ω	.1Ω	.1Ω	NC	†360Ω	NC	†1650Ω
V3	ECC83 12AX7	†240K	80K	1500Ω	.1Ω	.1Ω	†120K	270K	1500Ω	.1Ω
V4	EL84 6BQ5	NC	220K	150Ω	.1Ω	.1Ω	NC	†360Ω	NC	†1650Ω
V5	EZ81 6CA4	70Ω	NC	¶	.1Ω	.1Ω	NC	65Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V5. NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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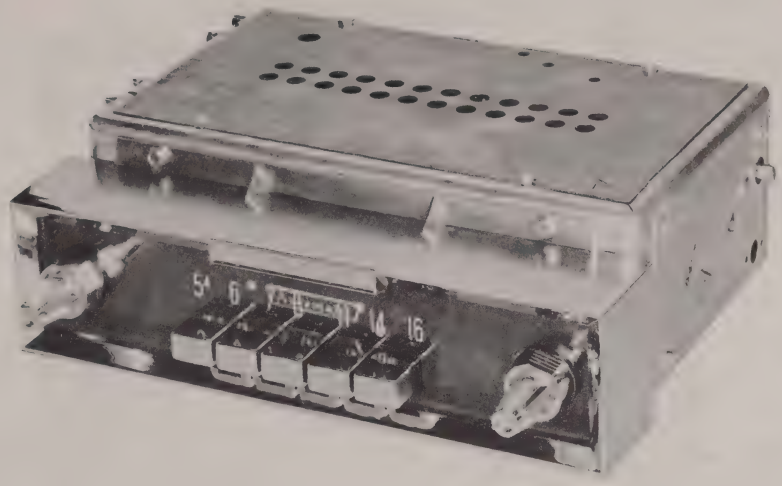
ANDREA MODEL PP-A3S

PHOTOFACT® Folder

AUTOMATIC MODELS
DE-300, DX-410, DXA-50

AUTOMATIC MODELS
DE-300, DX-410, DXA-50



TRADE NAME	Automatic Models DE-300 (For 1960 DeSotos), DX-410, DXA-50 (For 1960 Darts, DeSotos, Dodges)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 4 Tube - 2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	538 — 1610KC RATING 1.2 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4. GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Thru dummy (Fig. 1) to antenna receptacle.	"	1610KC Signal.	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

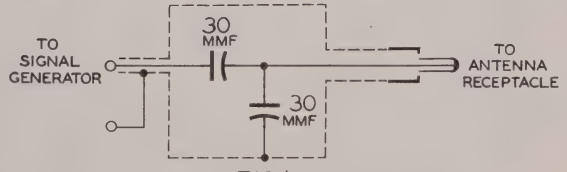


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KD259

SET 515 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	RF Amplifier	12BL6
V2	Converter	12AD6
V3	IF Amplifier	12BL6
V4	Det. -AVC-AF Amp.	12AE6A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	6L122 *	Driver		2N363		PNP
X2	8L201	Output				PNP Note 1

* Alternate Type 6D122
Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■500	15	20-317	AFH3-00-95	B0040	WP200.6		TVLS-2157 *	
B	▲500	15					TD-1000-6	TVAS-1097 *	Note 1
C2	750	3	20-757	SRE3V500	BR1000-6	PETA190			

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	40	#28-800L	NPO-DI 39	DD-390	L10Q39	CCD-390	GP439	5GA-Q39
C4								
C5A		#28-4046						
B								
C		Note 1	NPO-DI 5.0	DD-050	L10V5	CCD-050	GP550	5GA-V50
C6	5		N750-DI 100	DTZ-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C7	100 N750		DI-27	DD-270	L10Q27	CCD-270	GP427	5GA-Q27
C8	27	Note 2	BPD-002	DD-202	BYA10D2	CCD-202	GP220	5GA-D20
C9	2000		BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C10	10000	Note 4	BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C11	10000		BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C12	10000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	5GA-D30
C13	3000	Note 3	DI-3000	DD-302	BYA10D3	CCD-302	GP230	5GA-D30
C14	3000							

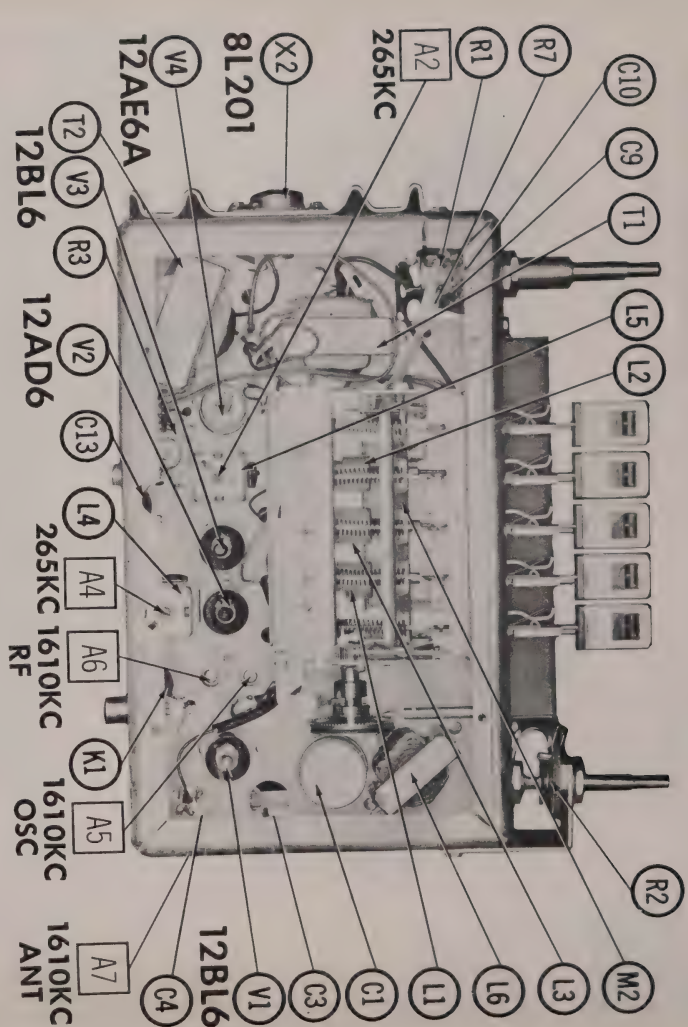
Note 1. Some versions may use 12mmf in this application.
Note 2. Some versions may use 3000mmf in this application.
Note 3. Not used in some versions.
Note 4. Part of component combination unit in some versions (Part #89-592).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg		80A1390	F1-68	RTV-716C			Tone
B	1meg			R2-59	Not Req.	† QJ-1300A	■UE4167S	Volume
	200K Tap							
C	Bushing			AK-28	XB-1			Power Off-On
D	Switch			KR-7	Not Req.			Speaker Fader Note 1
R2	25Ω	2(WW)	80A1403					Bias Note 2
R3	500Ω	2(WW)	62-501		39-500-100	112-500-100	FL-6008	
	100Ω Stop							

† "CONCENTRIKIT" equivalent: K-8 Kit with base elements and shafts: B13-139, P13-128 (Panel), B13-137X, RI-209 (Rear), S-43 (Bushing), 76-2 (Switch)
■ "STA-LOC" equivalent: FN26A, RU16T25, OS1937, IS2437, US42.
Note 1. Used in deluxe versions only.
Note 2. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	47K	
R5	1.2meg	(1meg) *
R6	47K	
R7	100K	
R8	2.2meg	①

ITEM No.	RATING	REMARKS
R9	4700Ω	(6800Ω) * ①
R10	470K	①
R11	150Ω	(120Ω) * ①
R12	12K	①
R13	150Ω	(220Ω) *

ITEM No.	RATING	REMARKS
R14	22Ω	
R15	1.0Ω	
R16	220Ω	

* Alternate Value.
① Part of component combination unit in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, 1.2meg	89-4204 (Note 1)	Sprague PRC-9
K2	Audio Coupling	3000mmf,0000 mmf, 47000mmf, 1500Ω, 150K, 2.2meg, 4.7meg, 10meg, 10meg	89-591 (Note 1)	Sprague DT-14

Note 1. Some versions use individual components in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Ant. Coil	①				
L2	RF Coil	①				
L3	Osc. Coil	①				
L4	Input IF Trans.	14-265A②	BC-350	12-H1	RTC-8638	
L5	Output IF Trans.	14-267A③	BC-354	12-H6	RTC-8640	

① Part of Tuner Assembly M2.
② Alternate Part #14-265X.
③ Alternate Part #14-267X.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1A	.9Ω	.008HY	75A601					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	7	1	75A1436①					① Part #75A1303 used in Model DE-300.

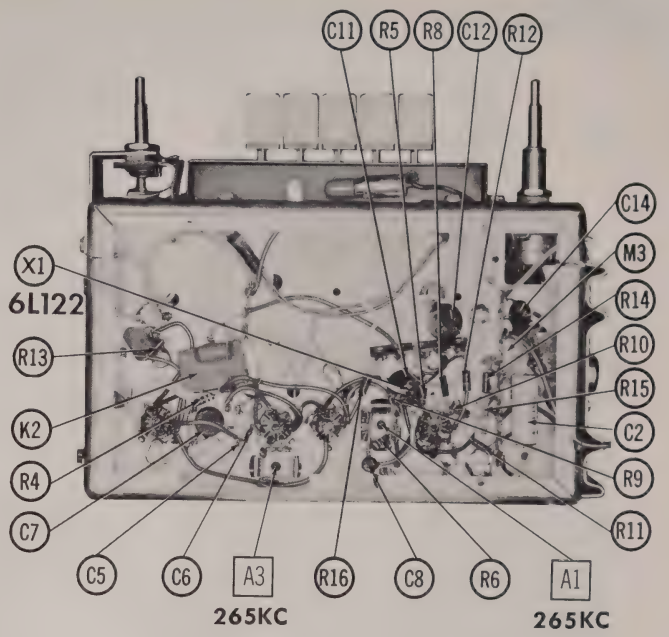
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	24Ω Tap ⓐ 3-4Ω	75A1437①					① Part #75A1306 used in Model DE-300

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	73-902	69A3	

CHASSIS—BOTTOM VIEW



FUSES

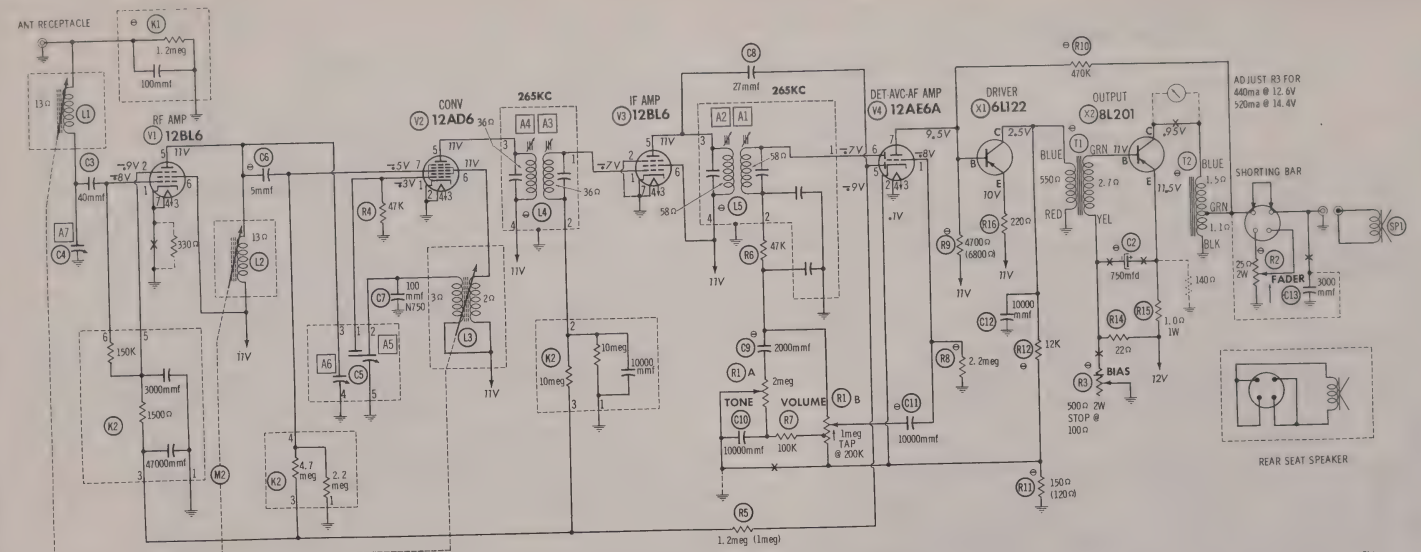
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	108-100		30707.5 (SFE 7½A 32V)	155009	SFE 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2 M3	Tuner Spark Plate	78B1412	Pushbutton Type

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



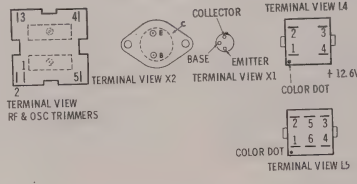
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

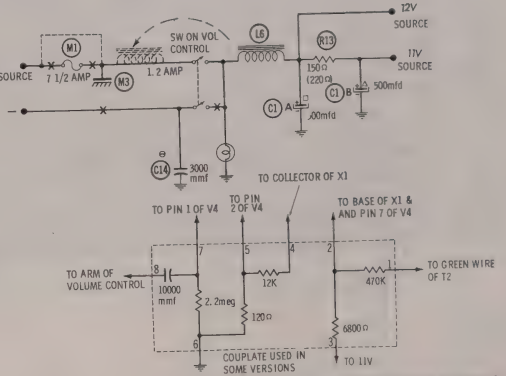
❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	6meg	6meg	.1Ω	0Ω	160Ω	150Ω	0Ω
V2	12AD6	47K	0Ω	.1Ω	0Ω	180Ω	150Ω	2.3meg
V3	12BL6	6.8meg	0Ω	.1Ω	0Ω	200Ω	150Ω	0Ω
V4	12AE6A	2.2meg	150Ω	.1Ω	0Ω	7meg	1meg	4100Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

AUTOMATIC MODELS
DE-300, DX-410, DXA-50

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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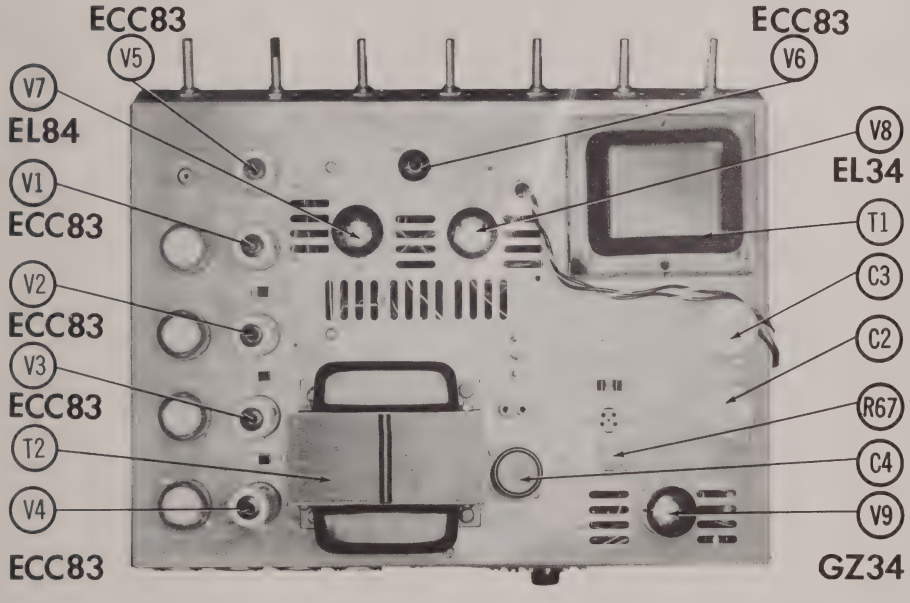
**BELL SOUND
MODEL 5660**

BELL SOUND
MODEL 5660

TRADE NAME	Bell Sound Model 5660
MANUFACTURER	Bell Sound Div., Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus 7, Ohio
TYPE SET	AC Operated 9 Tube Multi-Input Audio Amplifier
POWER SUPPLY	117/125 Volts AC, 60 Cycles RATING 165 Watts, 1.7 Amp. @117 Volts AC

BELL SOUND
MODEL 5660



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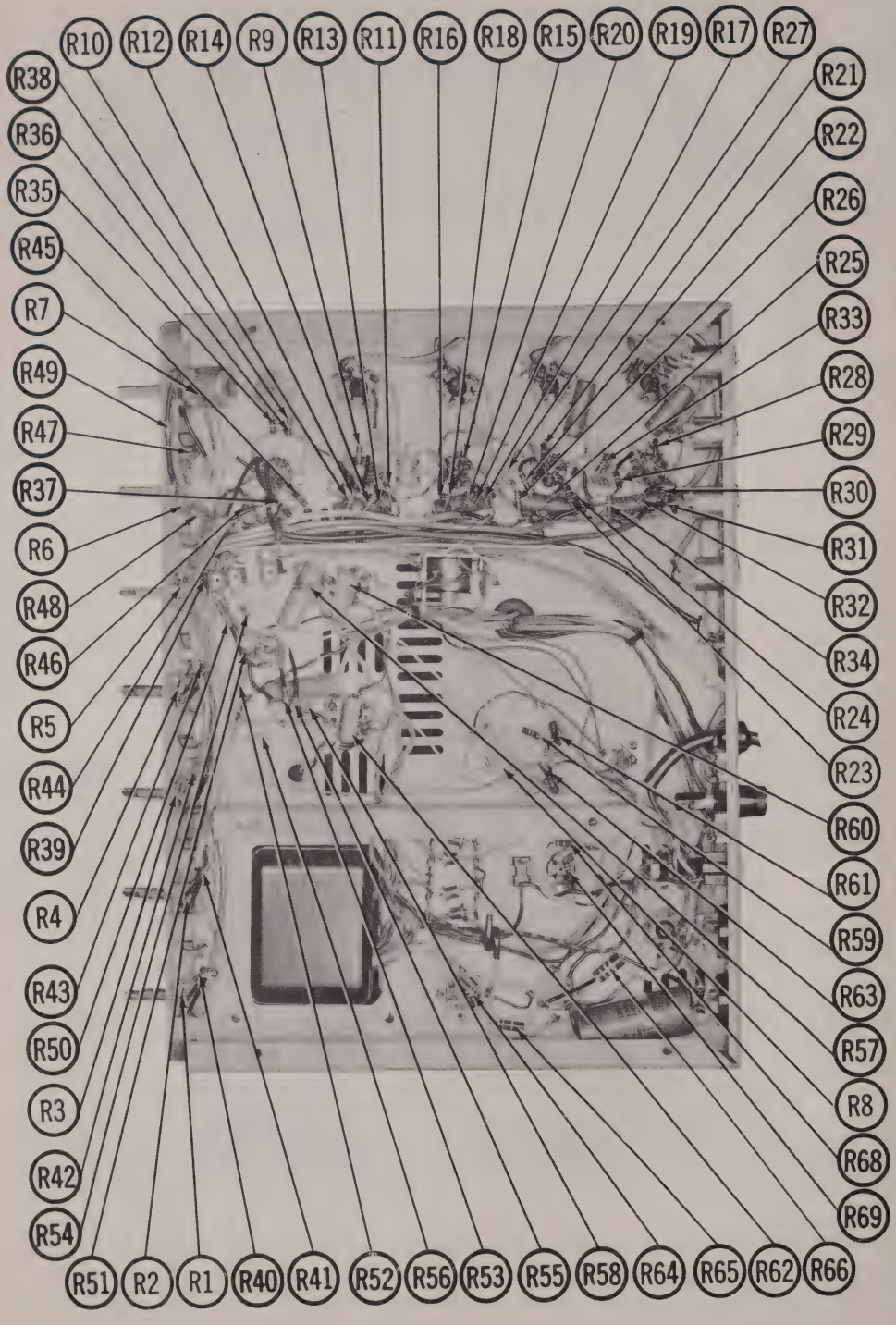
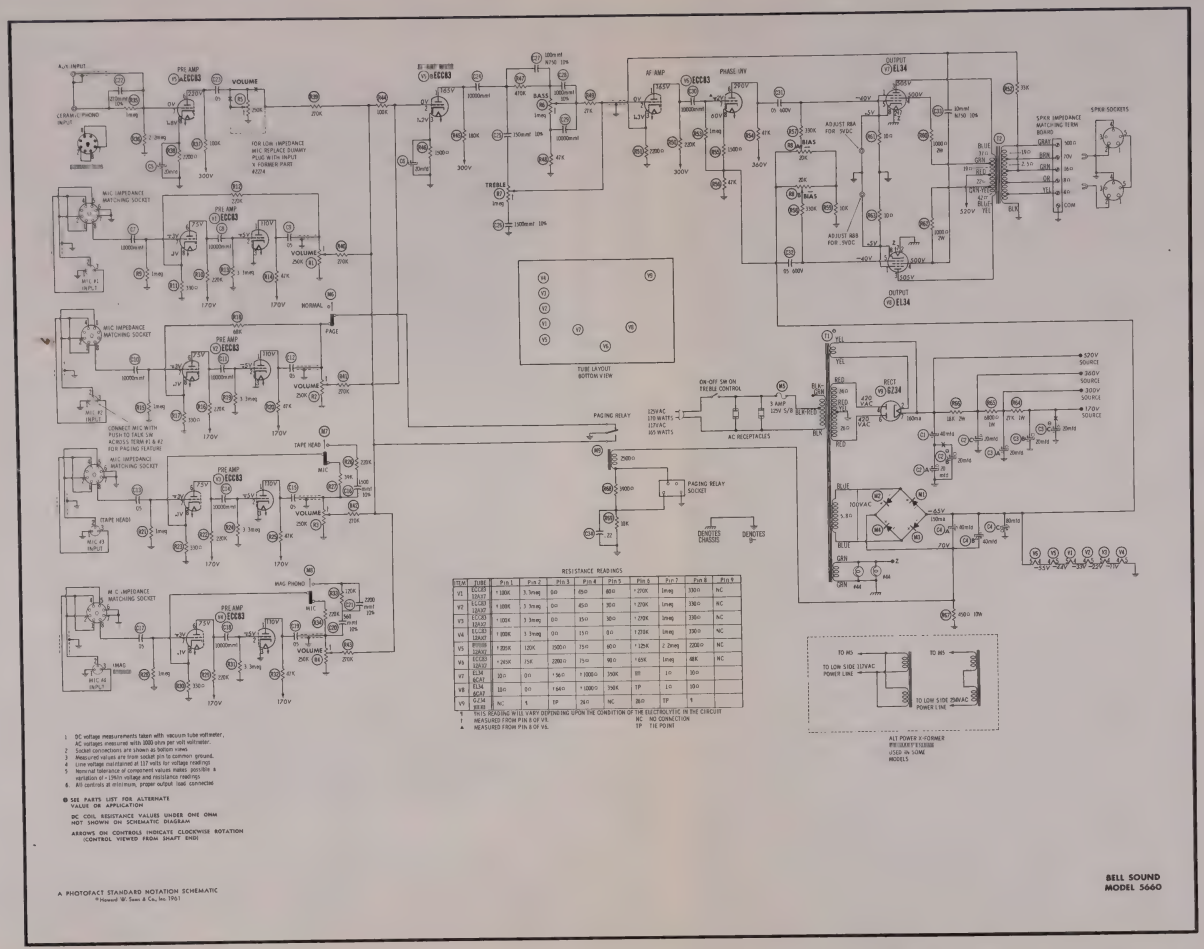
KX306

SET 515 FOLDER 8



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	▲180K	3.3meg	0Ω	450Ω	60Ω	▲270K	1meg	330Ω	NC
V2	ECC83 12AX7	▲100K	3.3meg	0Ω	450Ω	30Ω	▲270K	1meg	330Ω	NC
V3	ECC83 12AX7	▲100K	3.3meg	0Ω	150Ω	30Ω	▲270K	1meg	330Ω	NC
V4	ECC83 12AX7	▲100K	3.3meg	0Ω	150Ω	0Ω	▲270K	1meg	330Ω	NC
V5	6T8 12AV7	▲220K	120K	1500Ω	750Ω	60Ω	▲125K	2.2meg	2200Ω	NC
V6	ECC83 12AX7	▲265K	75K	2200Ω	750Ω	90Ω	▲65K	1meg	48K	NC
V7	EL34 6CA7	32Ω	0Ω	▲56Ω	▲1000Ω	390K	1M	1Ω	30Ω	
V8	EL34 6CA7	32Ω	0Ω	▲64Ω	▲1000Ω	390K	TP	1Ω	30Ω	
V9	GZ34 5AR4	NC	¶	TP	2kΩ	NC	2kΩ	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
↑ MEASURED FROM PIN 8 OF V6
▲ MEASURED FROM PIN 8 OF V6

NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±3% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

▲ PHOTOFACT STANDARD NOTATION SCHEMATIC
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BELL SOUND
MODEL 5660

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	GENERAL ELECTRIC USE	GENERAL ELECTRIC TYPE	ITEM No.	RAYTHEON USE	RAYTHEON TYPE
V1	Mike 1 Preamp.	ECC83/12AX7	V6	AF Amp. -Phase Inv.	ECC83/12AX7
V2	Mike 2 Preamp.	ECC83/12AX7	V7	Output	EL34/6CA7
V3	Mike 3 Preamp.	ECC83/12AX7	V8	Output	EL34/6CA7
V4	Mike 4 Preamp.	ECC83/12AX7	V9	Rectifier	GZ34/5AR4
V5	Phono Preamp. -AF Mixer	ECC83/12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	40	450	23A73	PRSi750	BR4045	TC78	TD-40-450	TVA-1712	
C2A	▲20	500	23B5	AFH3-52	C0390	FP399.5	TMT-3859	TVL-3956	Note 1
B	■20	500							
C	▲20	500							
C3A	▲20	450	23B11	AFH3-36	C0270	FP376.5	TMT-3724	TVL-3780	
B	■20	450							Note 1
C	▲20	450							
C4A	40	150	23B31	AFH3-12-20	C0100	FP311.8	TMT-3142	TVL-3443.4	
B	▲40	150							
C	■80	150							
C5	20	6	23B8	XPP-6020	NLW20-6	TT15X20	ML20-12	TE-1090	
C6	20	6	23B8	XPP-6020	NLW20-6	TT15X20	ML20-12	TE-1090	

Note 1. Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C16	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C17	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C19	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C20	560 10%		DI-560	DD-561		CCD-561	GP356	10TS-T56
C21	2200 10%		DI-2200			CCD-222	GP222	10TS-D22
C22	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C23	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C26	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C27	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C28	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C31	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C32	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C33	10 N750 10%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C34	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	15B82	B-51	A47-250K-Z	Q13-130	U44	Mic 1 Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	250K	½	15B82	B-51	A47-250K-Z	Q13-130	U44	Mic 2 Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	250K	½	15B82	B-51	A47-250K-Z	Q13-130	U44	Mic 3 Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	250K	½	15B82	B-51	A47-250K-Z	Q13-130	U44	Mic 4 Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	250K	½	15B82	B-51	A47-250K-Z	Q13-130	U44	Phono Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	imeg	½	15B81	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R7A	1meg	½	15B83	B-70-S	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R8A	20K	2	15B80	F1-27		† QJ-1509R	■ UE4172	Bias (V7)
B	20K	2		R2-27				Bias (V8)

† "CONCENTRIKIT" equivalent: K-8 kit with base elements & shafts: (Not available as a factory assembled unit).

■ "STA-LOC" equivalent: FA253L, RU253L, OS437A, IK625.

B11-119, P19-012 (Panel)
B11-119, R15-005 (Rear)
R5 (Retainer)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	1meg	
R10	220K	
R11	330Ω	
R12	220K	
R13	3.3meg	
R14	47K	
R15	1meg	
R16	220K	
R17	330Ω	
R18	68K	
R19	3.3meg	
R20	47K	
R21	1meg	
R22	220K	
R23	330Ω	
R24	3.3meg	
R25	47K	
R26	220K	
R27	39K	
R28	1meg	
R29	220K	

ITEM No.	RATING	REMARKS
R30	330Ω	
R31	3.3meg	
R32	47K	
R33	120K	
R34	220K	
R35	1meg	
R36	2.2meg	
R37	100K	
R38	2200Ω	
R39	270K	
R40	270K	
R41	270K	
R42	270K	
R43	270K	
R44	100K	
R45	180K	
R46	1500Ω	
R47	470K	
R48	47K	
R49	27K	
R50	220K	

ITEM No.	RATING	REMARKS
R51	2200Ω	
R52	33K	
R53	1meg	
R54	47K	
R55	1500Ω	
R56	47K	
R57	330K	
R58	330K	
R59	10K	
R60	1000Ω 2W	
R61	10Ω	
R62	1000Ω 2W	
R63	10Ω	
R64	27K 1W	
R65	6800Ω 1W	
R66	18K 2W	
R67	450Ω 10W	
R68	3900Ω	
R69	10K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2						
T1	125V@ 1.65A Tap@117V@ 1.7A	840V CT @.160A DC	5V@ 1.9A	32B107①					①For 117/125V, 60 Cycle Operation. Part #32B108 used for 117/234V, 50/60 Cycle Operation.
	SEC. 3	SEC. 4	SEC. 5						
	100V@ .34A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.						
T2	4100Ω CT Tap@520Ω CT	500Ω Tap@ 70V, 16Ω, 8Ω, 4Ω	32B105					

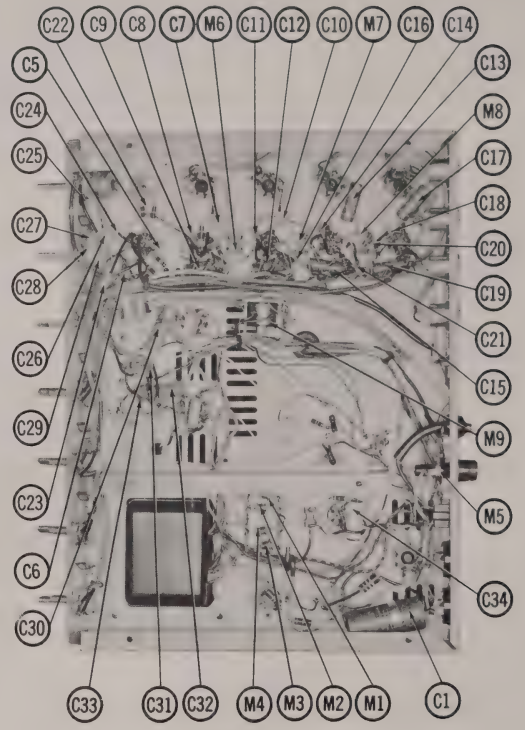
RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: BELL SOUND PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.150A	42A11		1N1763	40H	SR500	
M2	.150A	42A11		1N1763	40H	SR500	
M3	.150A	42A11		1N1763	40H	SR500	
M4	.150A	42A11		1N1763	40H	SR500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: BELL SOUND PART No. FUSE	BELL SOUND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M5	3AG	3A 125V S/B	53A7	53B5	313003 (3AG 3A 125V) S/B	342001	MDX3	HKP

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M6	Switch	43A67	Page - Normal (SPDT, Slide Type)
M7	Switch	43A45	Tape Head - Mic. (DPDT, Slide Type)
M8	Switch	43A45	Mag. Phono - Mic. (DPDT, Slide Type)
M9	Relay	43A78	SPDT, Plate (Paging)

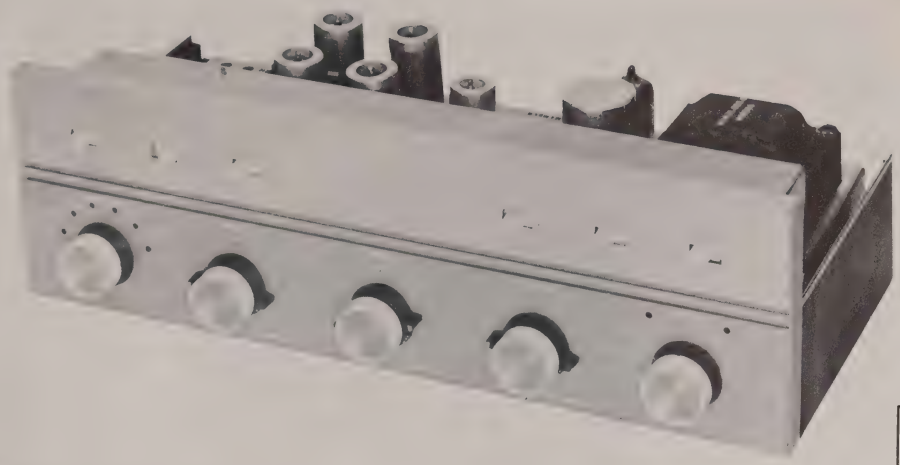
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	84A55	7 Used

PHOTOFACT® Folder

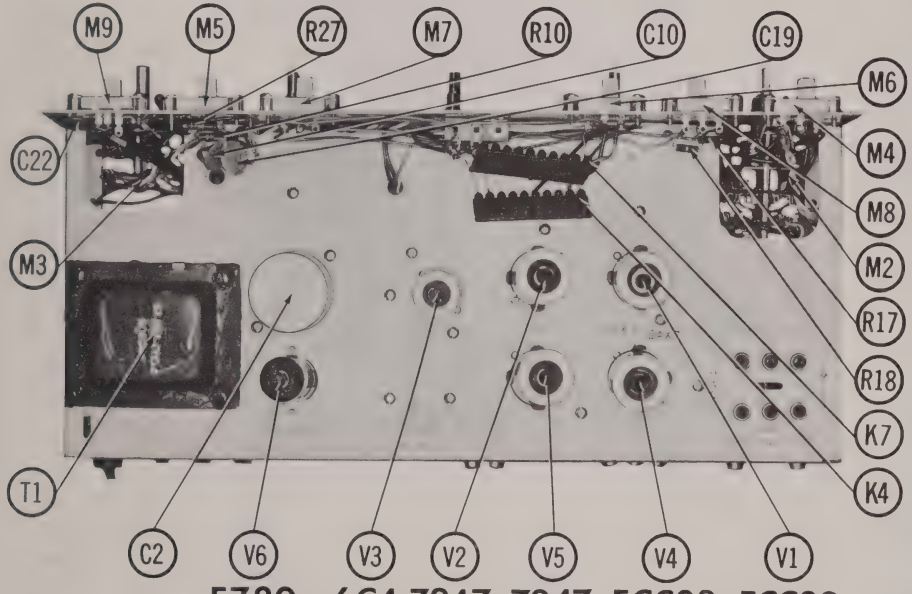
BOGEN MODEL PR2



BOGEN MODEL PR2

TRADE NAME	Bogen Model PR2
MANUFACTURER	Bogen-Presto Co., A Div. of the Siegler Corp., P. O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 6 Tube Stereo Preamplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 24 Watts, .22 Amp. @117 Volts AC

BOGEN MODEL PR2



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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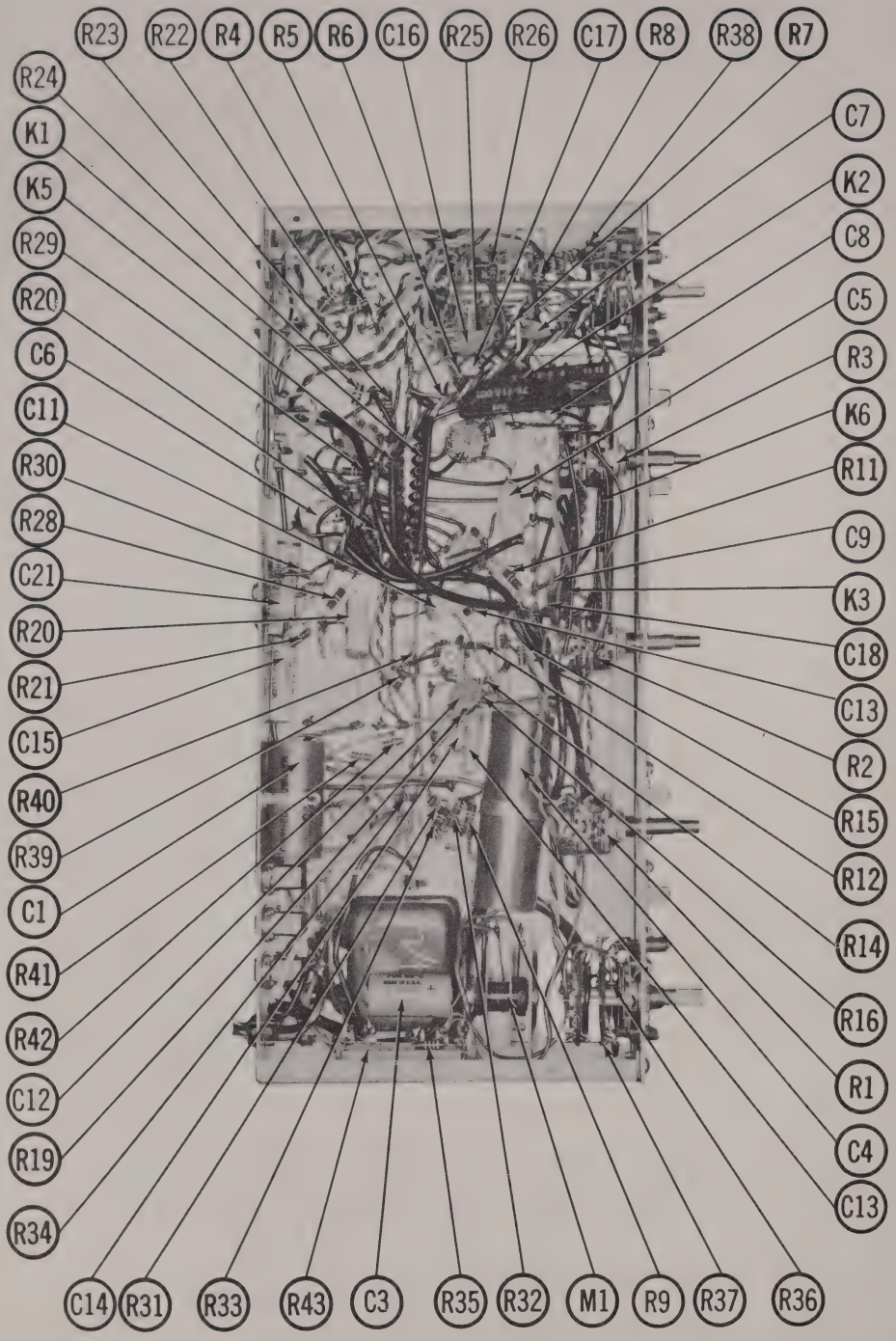
KU333

SET 515 FOLDER 9



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp. - Left Channel AF Amp.	ECC83/12AX7	V4	Right Channel Preamp. - Right Channel AF Amp.	ECC83/12AX7
V2	Left Channel AF Amp. - Left Channel Cath. Follower	7247	V5	Right Channel AF Amp. - Right Channel Cath. Foll.	7247
V3	Left Channel Phase Inv.	6C4	V6	Rectifier	EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	20	350		PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C2A	20	250			D0016	FP320	TMT-3534	TVL-3532	
B	20	250				TC55	TD-20-250	TVA-1508	
C	20	250							
D	20	250							
C3	5	200		PRS1550	BBR4-250	TC50X	TD-4-450	TVA-1501	
C4	200	15		PRS1530	BR20015	TC1502	TD-200-150	TVA-1423	
C5	100	6		PWE6100	NLW100-6	TT6X100	ML100-6	TE-1102	
C6	100	6		PWE6100	NLW100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C8	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C9	33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C10	3300 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C11	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C14	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C15	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C16	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C17	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C18	33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C19	3300 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C20	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C21	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C22	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-110	5HK-S15

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K 100K Tap	1/2	77-001-485	F1-44		† QJ-1267R	■ UE4106	Volume, Right Channel (2)
B	500K 100K Tap	1/2		R2-44				Volume, Left Channel (1)
R2A	2meg	1/2	77-001-484	F1-67		‡ QJ-1511R	▲ UE4187	Treble, Right Channel (2)
B	2meg	1/2		R2-67				Treble, Left Channel (1)
R3A	2meg	1/2	77-001-484	F1-67		‡ QJ-1511R	▲ UE4187	Bass, Right Channel (2)
B	2meg	1/2		R2-67				Bass, Left Channel (1)

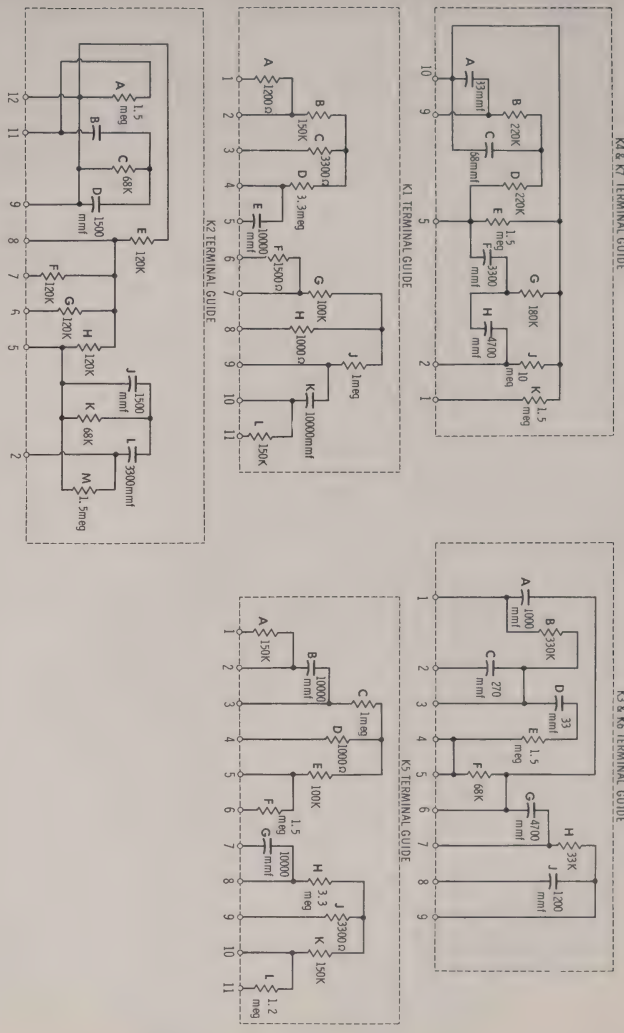
† "CONCENTRIKIT" equivalent: K-6 Kit with base elements & shafts: Bl3-133X, P17-031 (Panel)
(Not available as a factory assembled unit.) Bl3-133X, Rl-111 (Rear)

‡ "CONCENTRIKIT" equivalent: K-6 Kit with base elements & shafts: Bll-139, P17-031 (Panel)
(Not available as a factory assembled unit.) Bll-139, Rl-111 (Rear)

■ "STA-LOC" equivalent: FA55T15, RU55T124, OF1000, IS1437.

▲ "STA-LOC" equivalent: FB26L, RU26L, OF1000, IS1437.

COMPONENT COMBINATION LAYOUT



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	47K	(4.7meg) *
R5	470K	
R6	120K	
R7	27K	
R8	100K	
R9	150K	
R10	68K	
R11	150K	
R12	1meg	
R13	100K	
R14	12K	
R15	91K	
R16	10meg	
R17	1.5meg	

ITEM No.	RATING	REMARKS
R18	1.5meg	
R19	10meg	
R20	10meg	
R21	1meg	
R22	47K	
R23	470K	(4.7meg) *
R24	120K	
R25	27K	
R26	100K	
R27	68K	
R28	150K	
R29	10meg	
R30	1meg	
R31	10K	

ITEM No.	RATING	REMARKS
R32	150K	
R33	10K	
R34	12K	
R35	68K	
R36	68K	
R37	68K	
R38	82K	
R39	47Ω	
R40	47Ω	
R41	150Ω	
R42	150Ω	
R43	2Ω 10W	IRC#PW10-2Ω

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BOGEN PART No.	REPLACEMENT DATA
K1	Audio Network	10000mmf, 10000mmf, 1000Ω, 1200Ω, 1500Ω, 3300Ω, 100K, 150K, 150K, 1meg, 3.3meg	78-914-001	
K2	Selector Sw. Comp.	1500mmf, 1500mmf, (2) 3300mmf, 68K, 68K, 120K, 120K, 120K, 120K, 1.5meg, 1.5meg	78-916-001	
K3	Tone Comp.	33mmf, 270mmf, 1000mmf, 1200mmf, 4700mmf, 33K, 68K, 330K, 1.5meg	78-910-001	
K4	Filter Comp.	33mmf, 68mmf, 3300mmf, 4700mmf, 180K, 220K, 220K, 1.5meg, 1.5meg, 10meg	78-917-001	
K5	Audio Network	10000mmf, 10000mmf, 1000Ω, 1200Ω, 1500Ω, 3300Ω, 100K, 150K, 150K, 1meg, 3.3meg	78-913-001	
K6	Tone Comp.	33mmf, 270mmf, 1000mmf, 1200mmf, 4700mmf, 33K, 68K, 330K, 1.5meg	78-910-001	
K7	Filter Comp.	33mmf, 68mmf, 3300mmf, 4700mmf, 180K, 220K, 220K, 1.5meg, 1.5meg, 10meg	78-917-001	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ .22A	460VCT @ .010A	24VCT @ .600A	83-621-000					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V@ .9A								

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	BOGEN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.600A	86-0013-01 *			4N33-1C1-RV		* Selenium (Common Cathode)

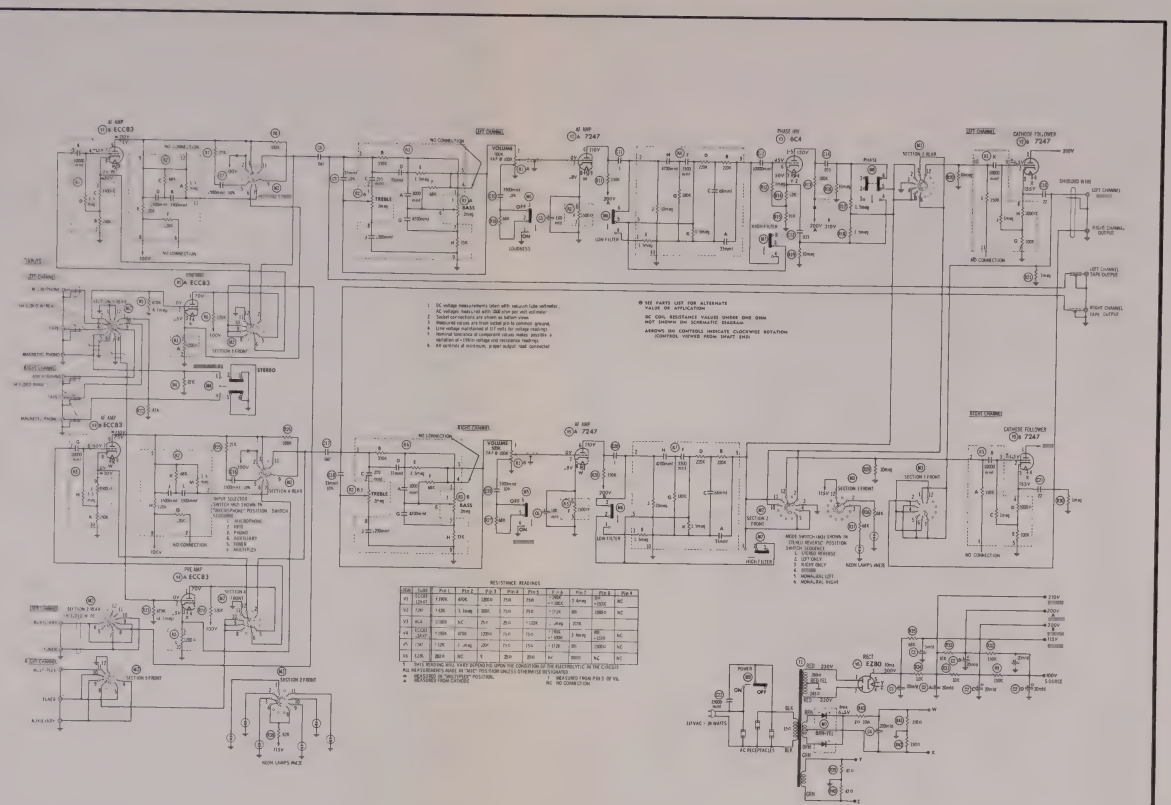
MISCELLANEOUS

ITEM No.	PART NAME	BOGEN PART No.	NOTES
M2	Switch	81-001-508	Input Selector, Rotary Wafer Type
M3	Switch	81-001-509	Mode (Rotary Wafer Type)
M4	Switch	81-003-002	Cartridge Stereo or Mono. (DPDT Slide Type)
M5	Switch	81-003-002	Loudness (DPDT Slide Type)
M6	Switch	81-003-002	Lo Filter (DPDT Slide Type)
M7	Switch	81-003-002	Hi Filter (DPDT Slide Type)
M8	Switch		Phase (SPDT Slide Type)
M9	Switch	81-003-004	Power Off-On (SPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

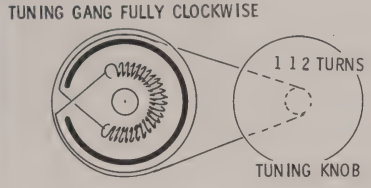

RESISTANCE READINGS
A PHOTOFACT STANDARD NOTATION SCHEMATIC
SOGEN MODEL PR2

PHOTOFACT® Folder with CIRCUITRACE®

CROWN MODEL TR-999

CROWN MODEL TR-999

TUNING DRIVE CORD STRINGING



FRONT VIEW

TRADE NAME	Crown Model TR-999
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	3 Volts DC RATING 15MA @ 3 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC 20MA @ 3 Volts DC (Signal, Normal Volume)

CROWN MODEL TR-999

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"

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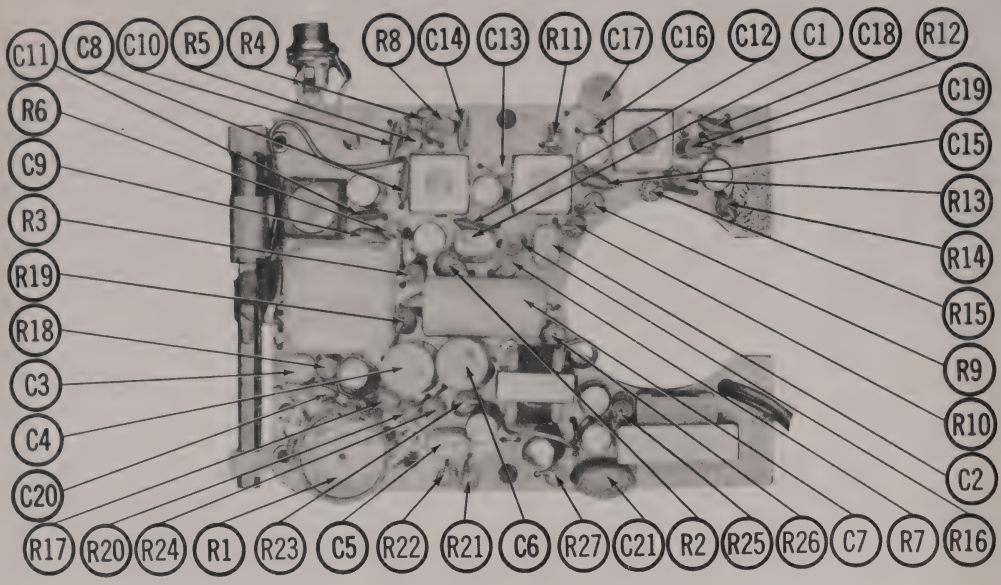
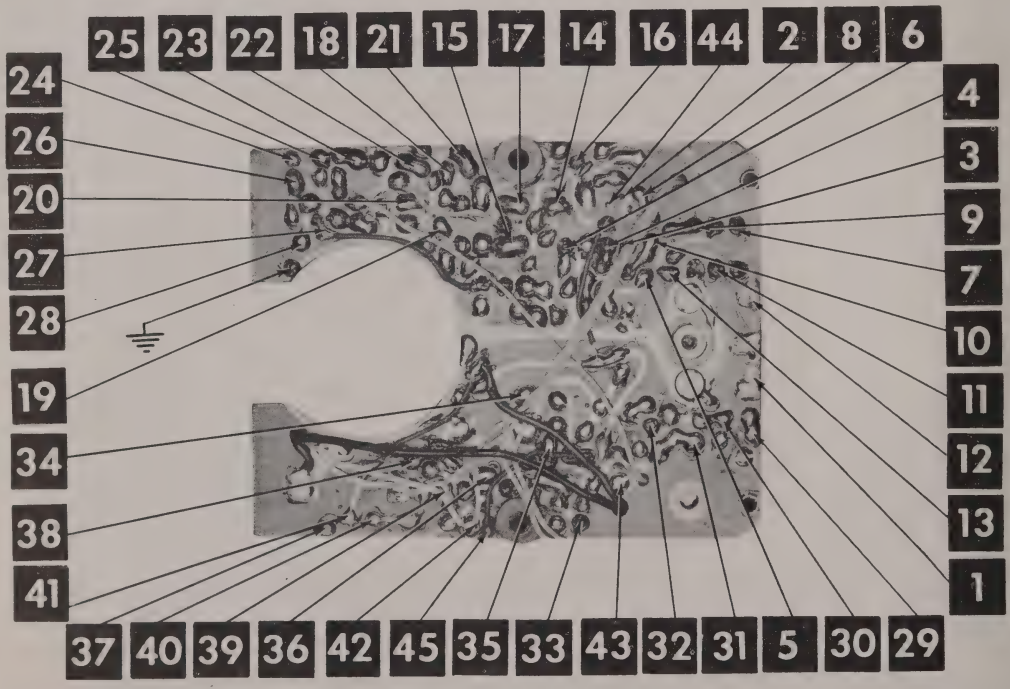
KF269

SET 515 FOLDER 10

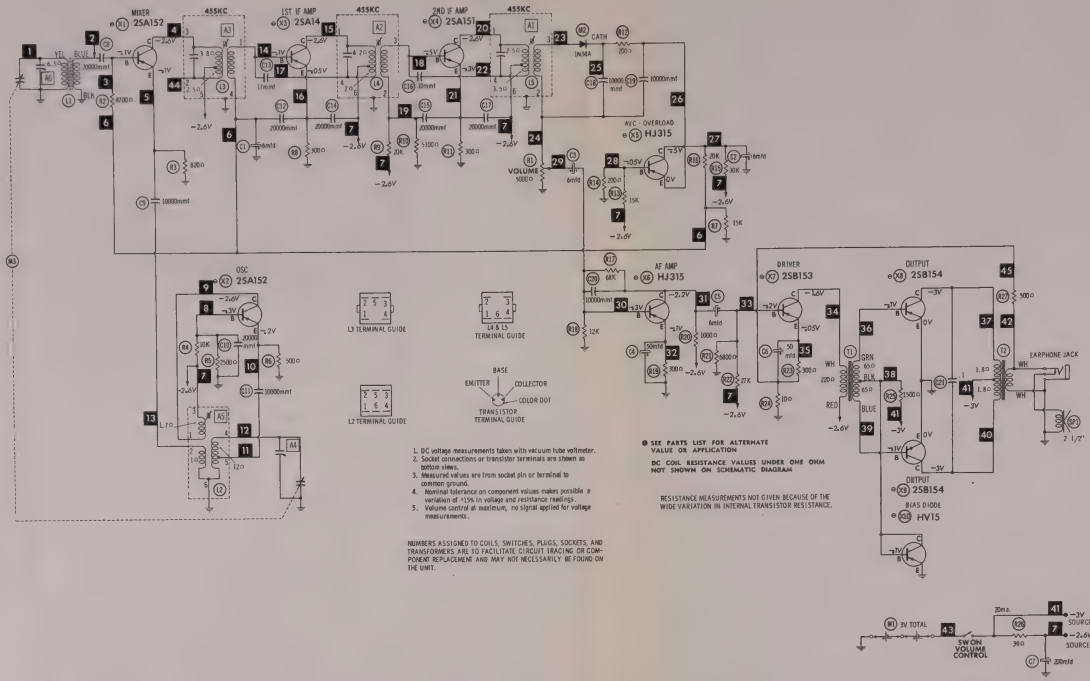


PRINTED BOARD-CAPACITOR AND RESISTOR IDENTIFICATION



A Howard W. Sams CIRCUITRACE* Photo

PRINTED BOARD



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CROWN MODEL TR-999

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA152①	Mixer				PNP
X2	2SA152①	Oscillator				PNP
X3	2SA14②	1st IF Amplifier				PNP
X4	2SA151③	2nd IF Amplifier				PNP
X5	HJ-315④	AVC- Overload	2N406			PNP
X6	HJ-315④	AF Amplifier	2N406			PNP
X7	2SB153⑤	Driver	2N406			PNP
X8	2SB154⑥	Output	2N408			PNP
X9	2SB154⑥	Output	2N408			PNP
X10	HV-15⑦	Bias Diode	1N2326			PNP

① Alternate Type HJ-319. ② Alternate Type HJ-62. ③ Alternate Type HJ-318. ④Alternate Type 2SB153. ⑤ Alternate Type HJ-315. ⑥ Alternate Type HJ-317, 2SB156. ⑦ Alternate Type HV-18.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6			NLW6-15	TT10X6	ML6-6	TE-1085	
C2	6	6			NLW6-15	TT10X6	ML6-6	TE-1085	
C3	6	6			NLW6-15	TT10X6	ML6-6	TE-1085	
C4	50	6		BCD6050		TT6X50	ML50-6	TE-1100	
C5	6	6			NLW6-15	TT10X6	ML6-6	TE-1085	
C6	50	6		BCD6050		TT6X50	ML50-6	TE-1100	
C7	200	6						TE-1064	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C11	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C12	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C13	17				C10QI8C	CCTO-180	CNO-418	10TCC-QI8
C14	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C15	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C16	10		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C17	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C18	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C19	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C20	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C21	.1 50V			DA-104	H-05P1		TA-010	TG-P10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	G-5KΩ	B16-214				Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4700Ω	
R3	820Ω	
R4	10K	
R5	2500Ω	
R6	500Ω	
R7	15K	
R8	300Ω	
R9	20K	
R10	5100Ω	

ITEM No.	RATING	REMARKS
R11	300Ω	
R12	200Ω	
R13	15K	
R14	200Ω	
R15	30K	
R16	20K	
R17	68K	
R18	12K	
R19	300Ω	

ITEM No.	RATING	REMARKS
R20	1000Ω	
R21	6800Ω	
R22	27K	
R23	300Ω	
R24	10Ω	
R25	1500Ω	
R26	39Ω	
R27	500Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CROWN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	AM-L-6				
L2	Osc. Coil	AM-8048				
L3	1st IF Trans.	FMC-6088				
L4	2nd IF Trans.	FMC-5485				
L5	3rd IF Trans.	FMC-6019				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.7	1	AM-T-35					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	80Ω CT	6-8Ω	AM-T-36					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω	PF-250A		

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A *		930 *		1015 *		M-15R *	* 2 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		CROWN PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A		1N34A	1N34A	Detector (Pigtail)

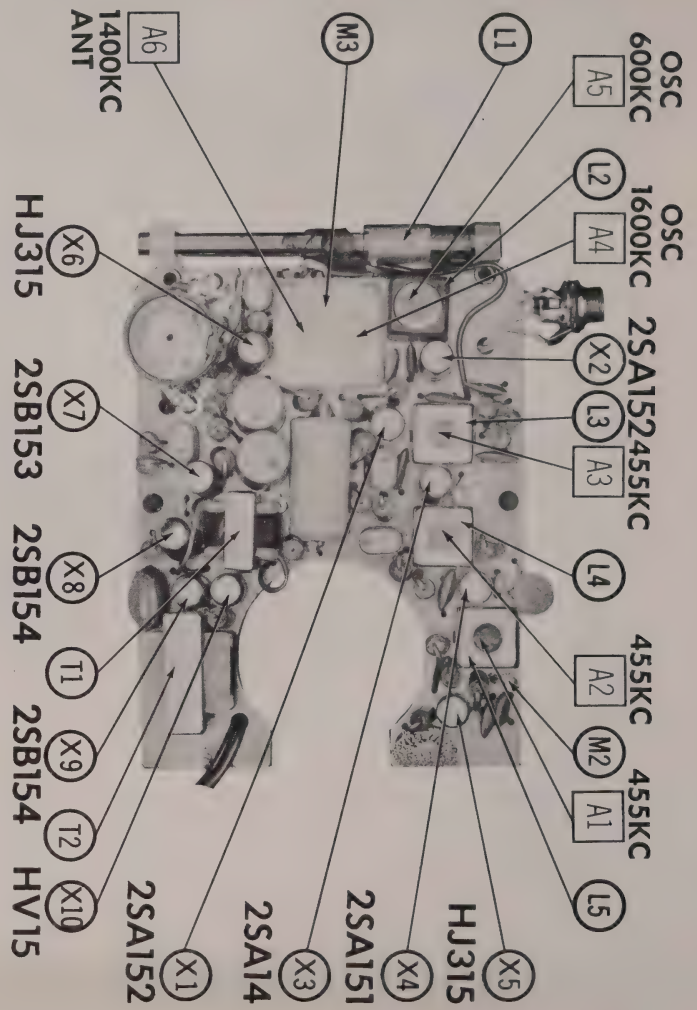
MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap	PVP-5	2 Gang (Ant. 146.6mmf Max., Osc. 63.2mmf Max.)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

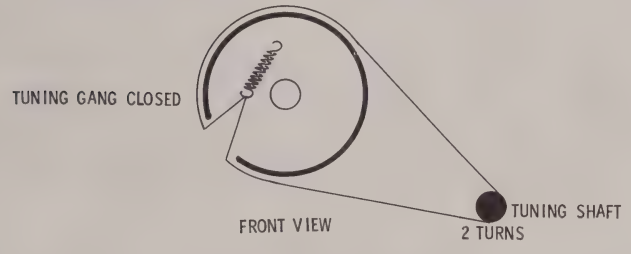
OLSON MODEL RA-340

OLSON MODEL
RA-340

OLSON MODEL
RA-340

TRADE NAME	Olson Model RA-340
SUPPLIER	Olson Radio Corp., 260 S. Forge Street, Akron 8, Ohio
TYPE SET	AC-DC Operated 6 Tube FM Receiver
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—FREQ. MOD.	88 — 108MC RATING 30 Watts, .32 Amp. @117 Volts AC

TUNING DRIVE CORD STRINGING



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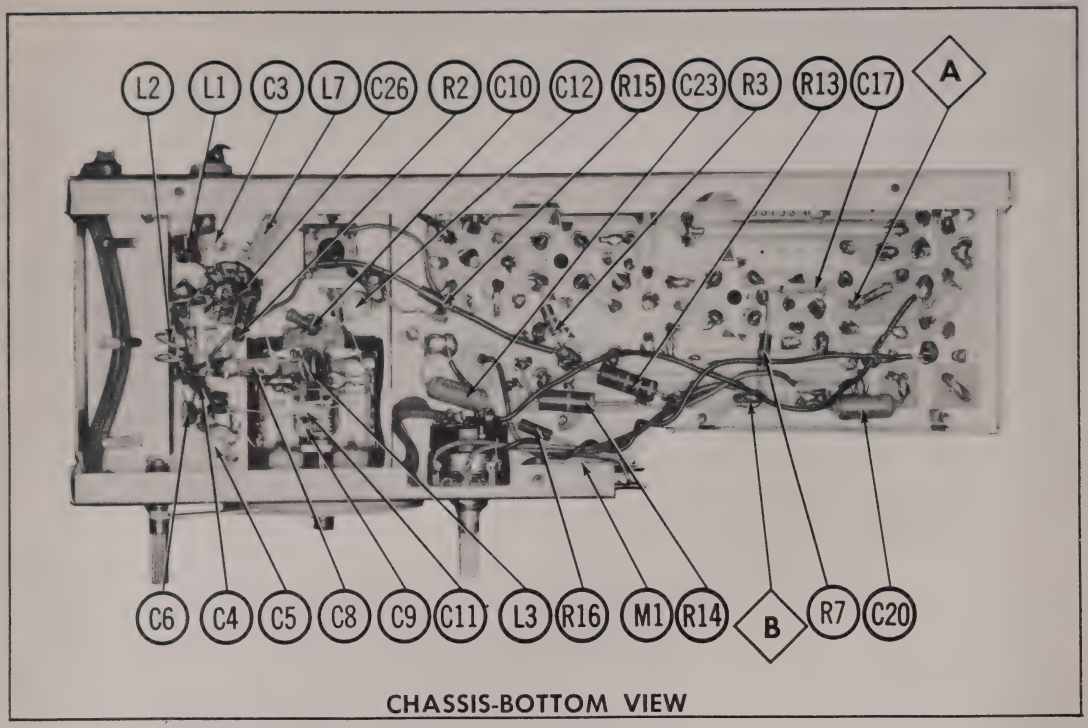
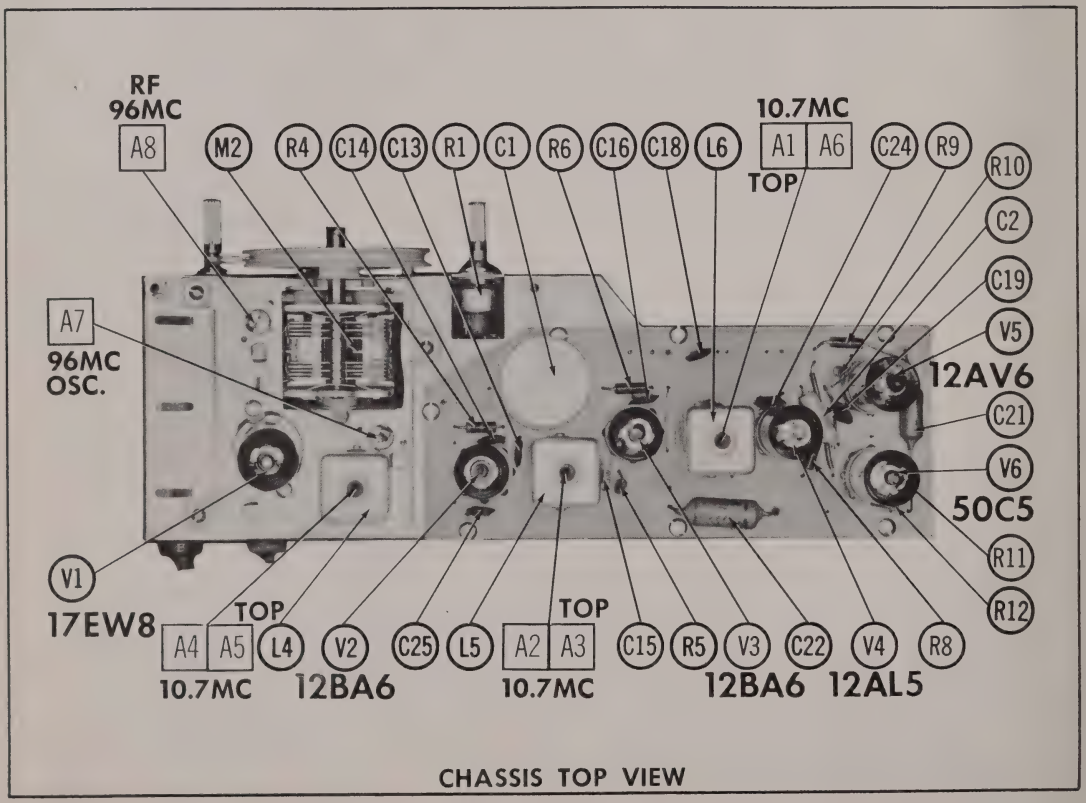
KI167

SET 515 FOLDER 12



CHASSIS-BOTTOM VIEW



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A6....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A7, A8.....GENERAL CEMENT #8721, 8722
WALSCO #2519

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (± 1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of Converter. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	DC probe to point (B). Common to point (C).	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of Converter. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A1, A2, A3, A4, A5	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
2.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A6	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	High side thru 470Ω to antenna wire. Low side to chassis.	96MC (Unmod.)	96MC	DC probe to point (A). Common to chassis.	A7, A8	Adjust for maximum deflection.

FIG. 1

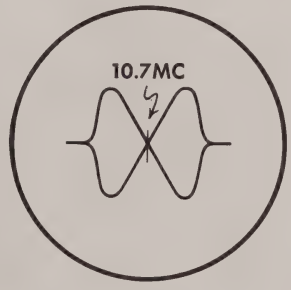


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC)	ITEM No.	USE	TYPE (RAYTHEON / SYLVANIA)
V1	RF Amp. - Conv.	17EW8	V4	Ratio Detector	12AL5
V2	1st IF Amplifier	12BA6	V5	AF Amplifier	12AV6
V3	2nd IF Amplifier	12BA6	V6	Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: OLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150							
B	60	150							
C	60	150							
C2	5	25		PTT-25005	NLW5-50	TT25X5	ML5-25	TE-1202	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5 + .5mmf	Note 1	NPO-SI 5	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C4	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C5		Note 1						
C6	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C7	.5		NPO-SL5	TCZ-R5				
C8	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C9	15		SI 15	D6-150	L10Q15	CCD-150	GP415	10TS-Q15
C10	30 10% N330					*		
C11	10		SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C12								
C13	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C14	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C15	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C16	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C17	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C18	1500		DI-1500	DD-152	BYA10D15	CCD-152	GP215	10TS-D15
C19	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C20	.002 400V		P488N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C21	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-425	6TM-D50
C22	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-425	6TM-D50
C24	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C25	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C26	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	10TS-D20

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: OLSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½		B-70-S				Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	220K	
R3	330Ω	
R4	100Ω	
R5	220K	
R6	330Ω	

ITEM No.	RATING	REMARKS
R7	47K	
R8	22K	
R9	220K	
R10	4.7meg	
R11	470K	

ITEM No.	RATING	REMARKS
R12	150Ω	
R13	470Ω 1W	
R14	100Ω 1W	
R15	1000Ω	
R16	22Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: OLSON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	Cathode Choke		BC-562	4604	RTC-8516	1.5uh
L2	RF Coil					
L3	Osc. Coil					
L4	1st IF Trans.		FM-254 *	1463-PC *	RTC-9046 *	
L5	2nd IF Trans.					
L6	Ratio Detector					
L7	Fil. Choke		BC-562	4604	RTC-8516	1.5uh

* Fabricate Mounting.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	OLSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	6-8Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLSON PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω		4A07Z8.4	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	OLSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.065A	*		1N1763 ‡	40H ‡	SR200 ‡	* Selenium Type ‡ Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	OLSON PART No.	NOTES
M2	Tuning Cap.		2 Gang

WIRING DATA

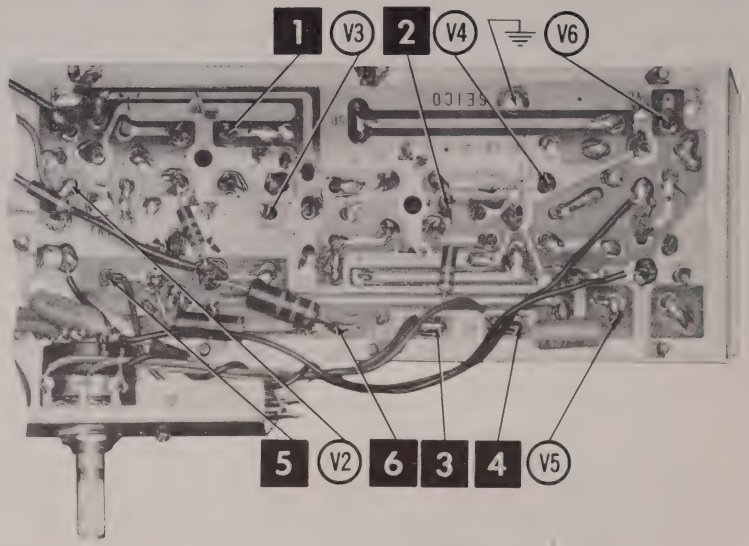
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

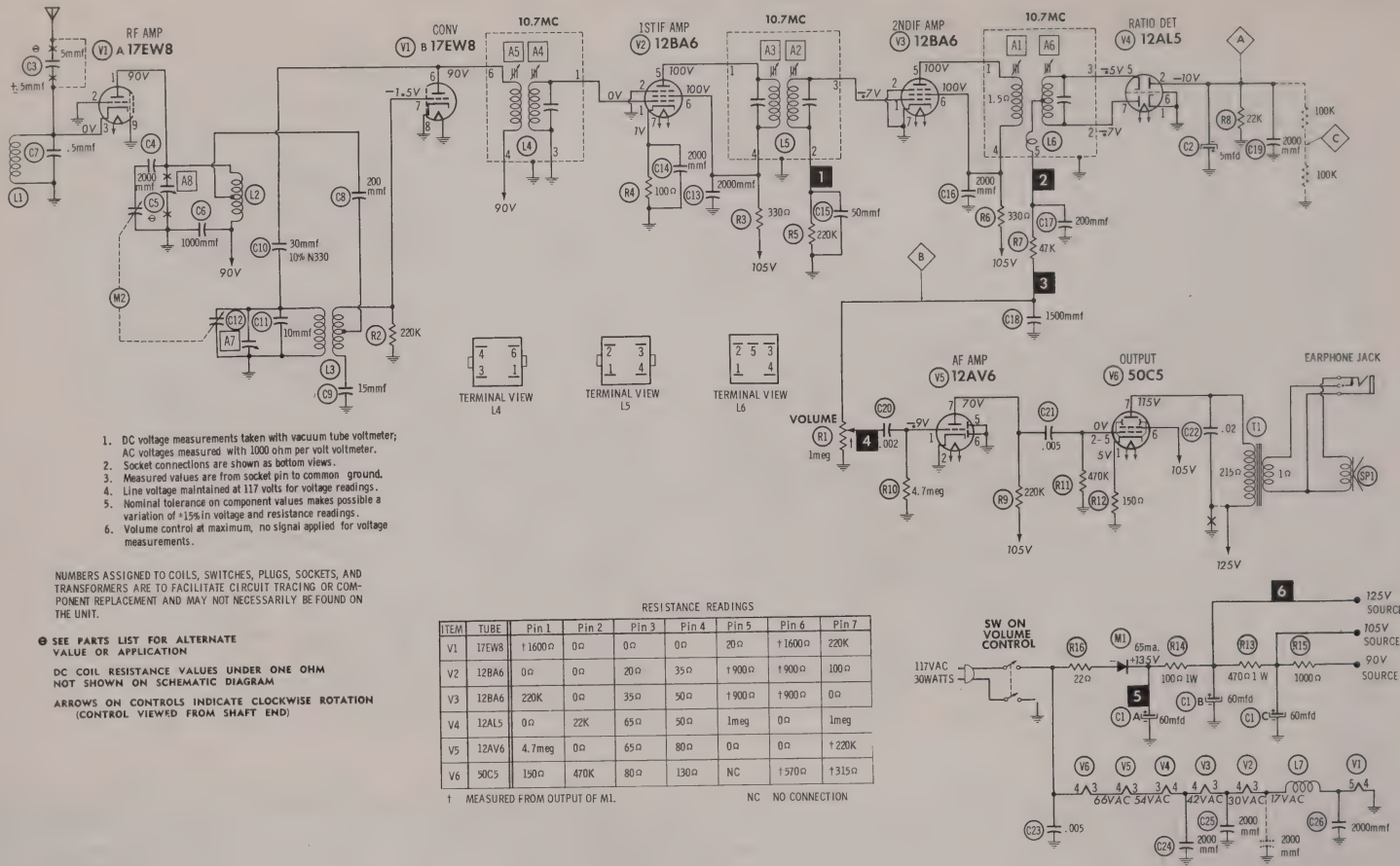
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	17EW8	†1600Ω	0Ω	0Ω	0Ω	20Ω	†1600Ω	220K
V2	12BA6	0Ω	0Ω	20Ω	35Ω	†900Ω	†900Ω	100Ω
V3	12BA6	220K	0Ω	35Ω	50Ω	†900Ω	†900Ω	0Ω
V4	12AL5	0Ω	22K	65Ω	50Ω	1meg	0Ω	1meg
V5	12AV6	4.7meg	0Ω	65Ω	80Ω	0Ω	0Ω	†220K
V6	50C5	150Ω	470K	80Ω	130Ω	NC	†570Ω	†315Ω

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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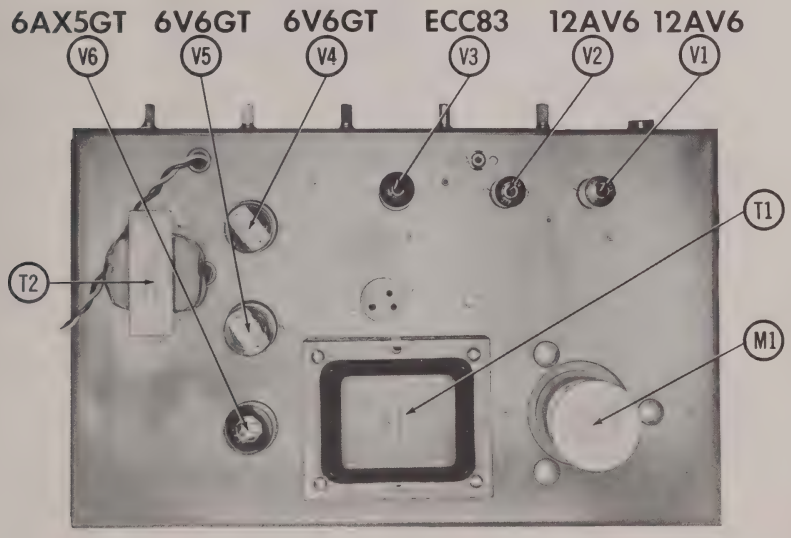
OLSON MODEL RA-340

PHOTOFACT® Folder

PACEMAKER MODELS PM 212M, PM 212M3

PACEMAKER MODELS
PM 212M, PM 212M3

TRADE NAME	Pacemaker Model PM212M, PM212M3
MANUFACTURER	Bell Sound Div., Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus 7, Ohio
TYPE SET	AC-Battery Operated 6 Tube Audio Amplifier With Manual Record Player
POWER SUPPLY	117 Volts AC, 60 Cycles (or) 12 Volt Storage Battery
RATING	77 Watts, .72 Amp. @117 Volts AC (or) 6.4 Amp. @12.6 Volts DC (Less Motor)



PACEMAKER MODELS
PM 212M, PM 212M3

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KR304

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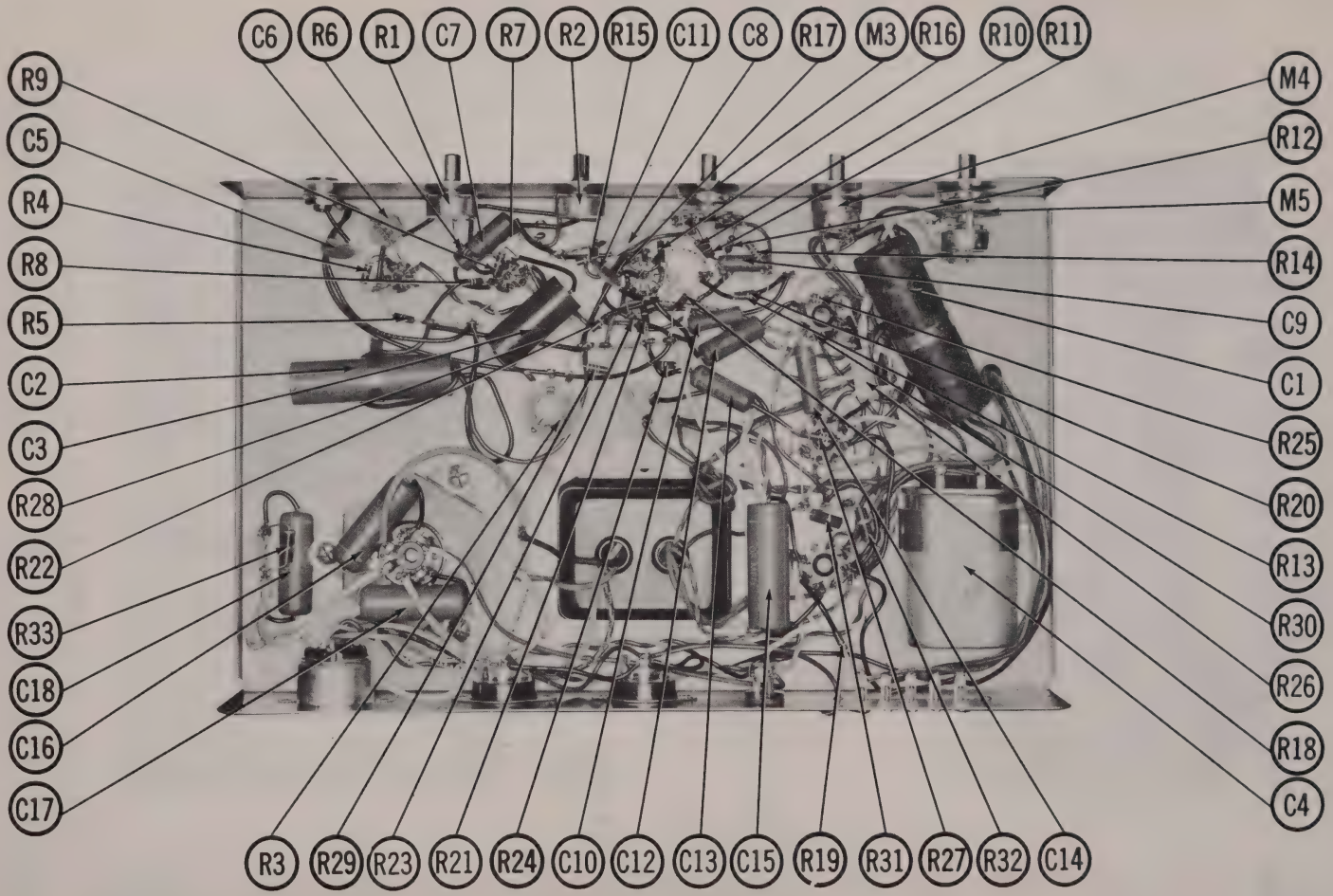
SET 515 FOLDER 13



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Microphone Preamp.	12AV6
V2	AF Amplifier	12AV6
V3	AF Amp.-Phase Inv.	ECC83/12AX7
V4	Output	6V6GT
V5	Output	6V6GT
V6	Rectifier	6AX5GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PACEMAKER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	450	B-20053P154	PR3-055	BBRT0925	WT700		TVAS-3727 *	
B	10	450							
C	100	50							
C2A	10	450	B-20053P152	PR3-035	BBRD1145	TCD72	TDLD-26	TVA-2722	
B	10	450							
C3	150	15	B-20053P155	PRS1370	BR1505	TC25015	TD-150-50	TVA-1311	
C4	4	236AC	B-20052P33	RMO-962	KGNT-2040	OP436		OR-2040	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C8	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C9	.005 400V 10%		V84C6D5-10%		PM6D5	6DP-1-502	GEM-1625	6TM-D50
C10	.003 400V 10%		V84C6D3-10%		PM6D3	6DP-1-302	GEM-1623	6TM-D30
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C13	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C14	.001 1600V		P1684CM-001	DD30-102	CUBI6D1	16DP-2-102	GEM-1621	MB-D1
C15	.03 2000V		P2584CM-03				GEM-3013	
C16	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C17	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C18	.5 200V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACEMAKER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	B20066P140	B-70	A47-1meg-Z	Q13-137	U53	Microphone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	B20066P140	B-70	A47-1meg-Z	Q13-137	U53	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	100Ω	2(WW)	B20066P141	WN-101	A43-100	WPK100	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	4.7meg	
R5	100K	
R6	270K	
R7	270K	
R8	270K	
R9	3300Ω	
R10	68K	
R11	150K	
R12	47K	
R13	470K	
R14	47K	
R15	270K	
R16	1meg	
R17	470K	
R18	6800Ω	
R19	910K	(1meg) *
R20	2200Ω	
R21	1meg	
R22	220K	
R23	3300Ω	
R24	220K	
R25	270K	
R26	250Ω 5W	IRC#PW5-250Ω
R27	270K	
R28	47K	
R29	47K	
R30	470K	
R31	1500Ω 2W	Note 1
R32	1500Ω 2W	Note 1
R33	30Ω 1W	

Note 1. When C31 is not used, C32 is 2700Ω.
* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA PACEMAKER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .72A (Note 1)	760VCT @ .10A (Note 2)	12.VCT @ 1.6A (Note 3)	B-20296					

Note 1. Used for 100VAC Phono Motor Supply on DC Operation.
Note 2. 630VCT @ .10A on DC Operation.
Note 3. Used for Primary Winding on DC Operation (12.6VCT @ 4.7A)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PACEMAKER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5700Ω CT	70V Tap @ 16Ω, 8Ω, 4Ω	B20295	A-3028①		24S43①		①Use 250Ω Tap For 70V Tap.

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA PACEMAKER PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interrupter	12V	60~		3489		3489	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

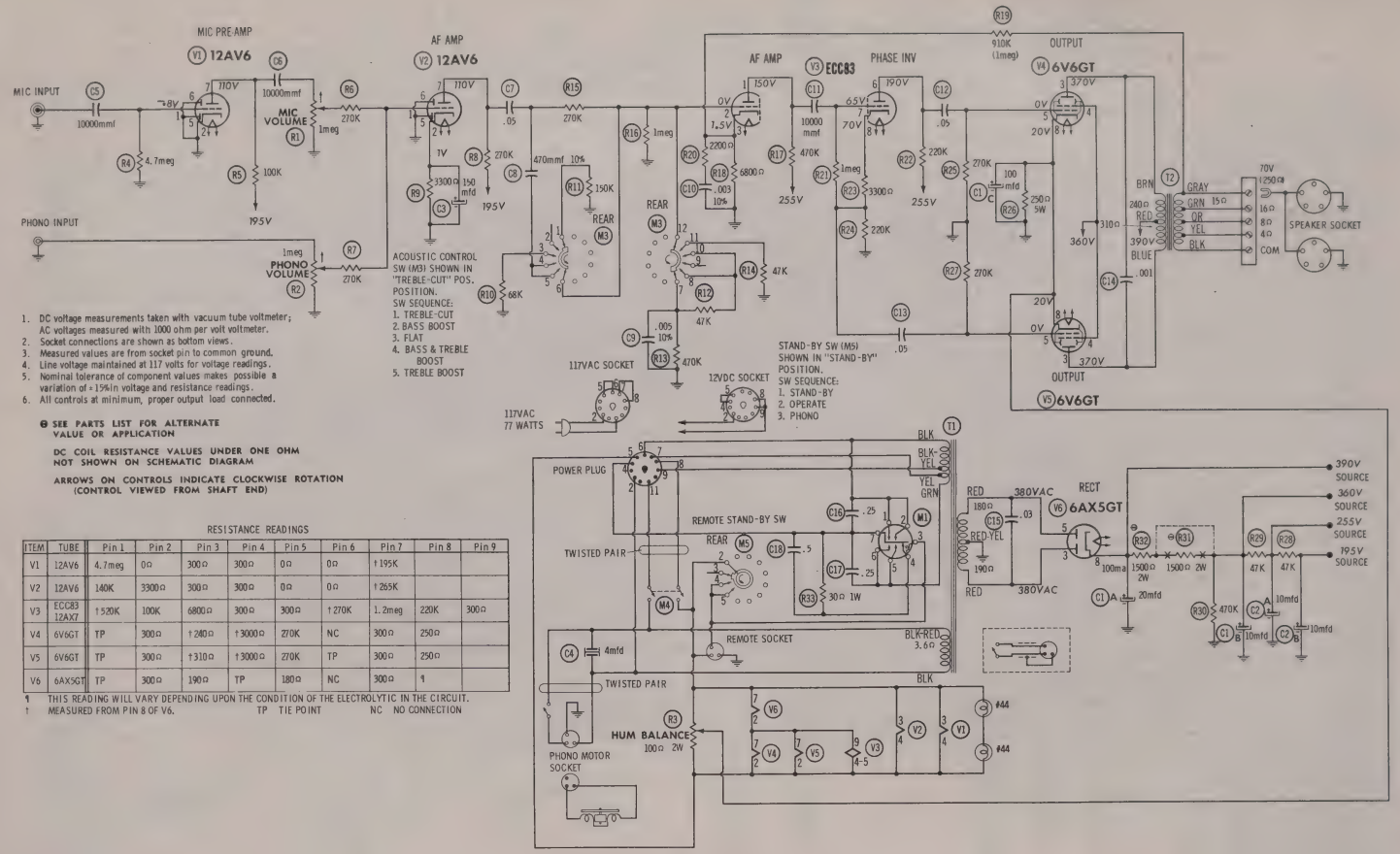
ITEM No.	PACEMAKER PART No. CARTRIDGE	PACEMAKER PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	B20237P6	Not Req.	5ST	GD-1 *	47	Not Req.	9980	Not Req.	For 3-Speed Motors.
	B20237P5								For Single-Speed Motors

MISCELLANEOUS

ITEM No.	PART NAME	PACEMAKER PART No.	NOTES
M3	Switch	B-20033P8	Acoustic Control, (Rotary Wafer)
M4	Switch	B-20105P19	Off-On (Rotary Snap Toggle)
M5	Switch	B-20033P9	Standby (Rotary Wafer)
M6	Motor	B-20239P3	Phono Drive (3 Speed)
	Motor	B-20239P4	Phono Drive (Single Speed)
	Idler Wheel		Walsco Part #1433

PACEMAKER MODELS
PM 212M, PM 212M3

FOLDER 13



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

❻ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AV6	4.7meg	0Ω	300Ω	300Ω	0Ω	0Ω	†195K		
V2	12AV6	140K	3300Ω	300Ω	300Ω	0Ω	0Ω	†265K		
V3	ECC83 12AX7	†520K	100K	6800Ω	300Ω	300Ω	†270K	1.2meg	220K	300Ω
V4	6V6GT	TP	300Ω	†240Ω	†3000Ω	270K	NC	300Ω	250Ω	
V5	6V6GT	TP	300Ω	†310Ω	†3000Ω	270K	TP	300Ω	250Ω	
V6	6AX5GT	TP	300Ω	190Ω	TP	TP	180Ω	NC	300Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V6. TP TIE POINT NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PACEMAKER MODELS PM 212M, PM 212M3

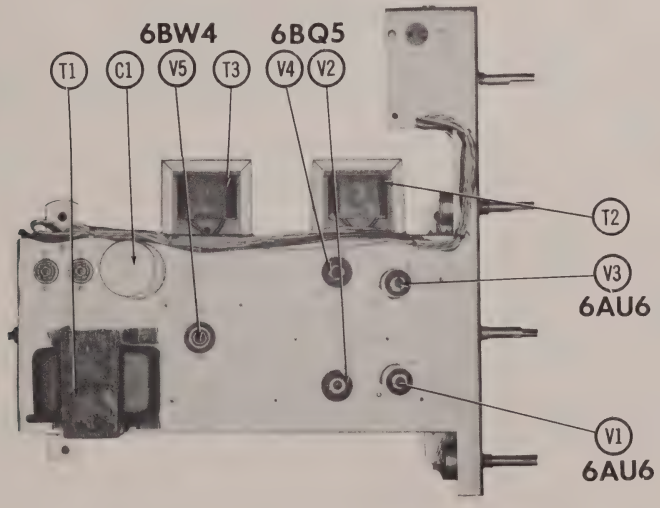
PHOTOFACT® Folder

PHILCO MODEL H-1714

PHILCO MODEL H-1714

TRADE NAME	Philco Model H-1714
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles RATING 75 Watts, .7 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER M-43—SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12



PHILCO MODEL H-1714

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT166

SET 515 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp.	6AU6	V4	Right Channel Output	6BQ5
V2	Left Channel Output	6BQ5	V5	Rectifier	6BW4
V3	Right Channel AF Amp.	6AU6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	450	30-2590-39	AFH4-18-10	D0171	FP446	TMQ-4637	TVL-4771.8	
B	■30	450							
C	10	450							
D	▲10	450							
C2	10	25	30-2417-49	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C3	50	25NP	30-2593-5	PRS7330	BR5015	TC2501 †		TVANS-1206.1*	
C4	25	25NP	30-2593-2	PRS7350	BR2515	TC29 †		TVANS-1205.1*	
C5	50	25NP	30-2593-5	PRS7330	BR5015	TC2501 †		TVANS-1206.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

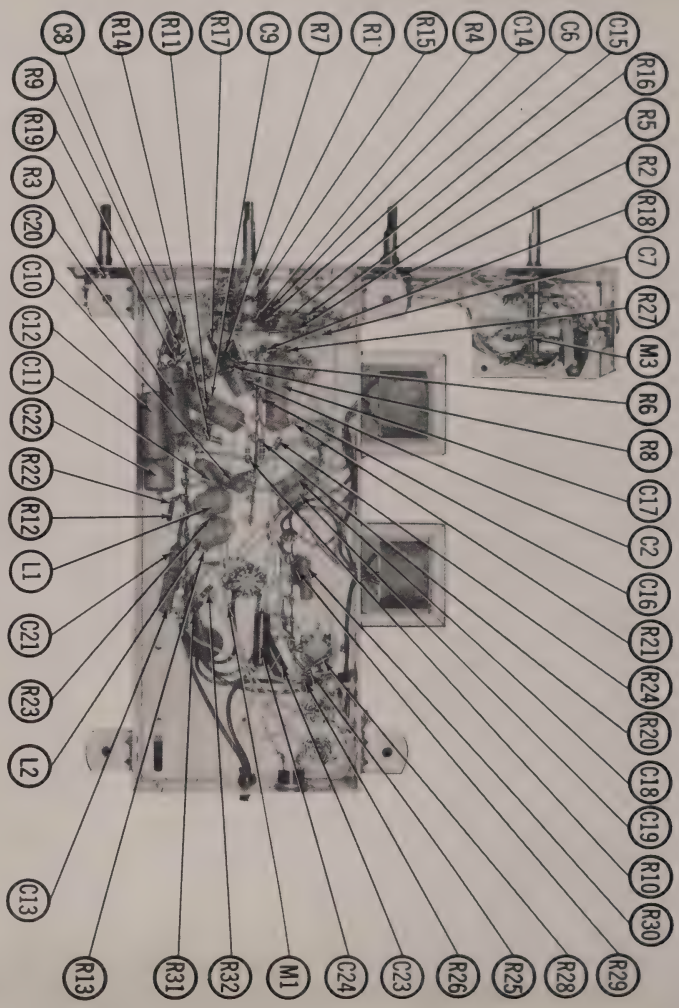
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	47		1468-000047M	DD-470	5W5Q47	CM-20B-470M	MC225	1FM-447
C7	.0022 200V		P288N-0022	D6-202	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C8	.0033 400V		P488N-0033	D6-302	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C9	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C10	.0047 600V		P688N-0047	D6-502	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C11	.0022 1000V		P1088N-0022	D6-202	CUB10D22	16DP-2-222	GEM-10222	10TM-D22
C12	.22 100V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C13	.001 1000V		P1088N-001	D6-102	CUB10D1	16DP-2-102	GEM-1021	10TM-D10
C14	47		1468-000047M	DD-470	5W5Q47	CM-20B-470M	MC225	1FM-447
C15	.0022 200V		P288N-0022	D6-202	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C16	.0033 400V		P488N-0033	D6-302	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C17	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C18	.0047 600V		P688N-0047	D6-502	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C19	.0022 1000V		P1088N-0022	D6-202	CUB10D22	16DP-2-222	GEM-10222	10TM-D22
C20	.22 100V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C21	.001 1000V		P1088N-001	D6-102	CUB10D1	16DP-2-102	GEM-1021	10TM-D10
C22	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C23	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C24	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		33-5601-1					Balance
B	2meg							Loudness, Right Channel
	900K Tap							
C	2meg							Loudness, Left Channel
	900K Tap							
R2A	1meg		33-5573-53	B-69	AD47-1meg-S		FA16L	Treble, Left Channel
B	1meg			SR-69	Not Req.		RU16L	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	500K		33-5573-54	B-60	AD47-500K-Z		FA55A	Bass, Right Channel
B	500K			SR-60	Not Req.		RU55A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	33K	
R5	120K	
R6	100Ω	
R7	100K	
R8	1000Ω	
R9	3900Ω	
R10	470K	
R11	56K	
R12	3300Ω	
R13	4700Ω	

ITEM No.	RATING	REMARKS
R14	150Ω	
R15	33K	
R16	120K	
R17	100Ω	
R18	100K	
R19	3900Ω	
R20	470K	
R21	56K	
R22	3300Ω	
R23	4700Ω	

ITEM No.	RATING	REMARKS
R24	150Ω	
R25	4.7meg	
R26	4.7meg	
R27	150K	
R28	10K	
R29	10K 2W	
R30	220Ω 3W	IRC#PW5-220Ω
R31	56Ω	
R32	56Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Tone Choke(100MH)	32-4628				
L2	Tone Choke(100MH)	32-4628				

CROSSOVER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L3		1.3Ω	8MH	32-8923-1					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .7A	680VCT @ .100A	6.3V @ 3A	32-8929-1①					① Some versions may use Part #32-8924-1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5800Ω	6-8Ω	32-8925-2					① Drill New Mounting Hole.
		SEC. 2						
		120Ω						
	PRI.	SEC. 1						
T3	5800Ω	6-8Ω	32-8925-1	A-2902 ①	A-2313	22S88	S-55X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	36-1673-4 *	4A15Z8	* Alternate Part #36-1673-9.
SP2	Electrostatic			36-1656-1		
SP3	12"	PM	14-16Ω	36-1678-3	12A31Z16	
SP4	4"	PM	6-8Ω	36-1673-4 *	4A15Z8	
SP5	Electrostatic			36-1656-1		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1 1/4"	length	#26 Wire					

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	PHILCO PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	325-8036	Not Req.	13TB	Not Req.	26S	S1-1 * S3-3 *	8TA4-S	N-8TA-S *	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Switch	42-2120-1	Function (Rotary Wafer Type)

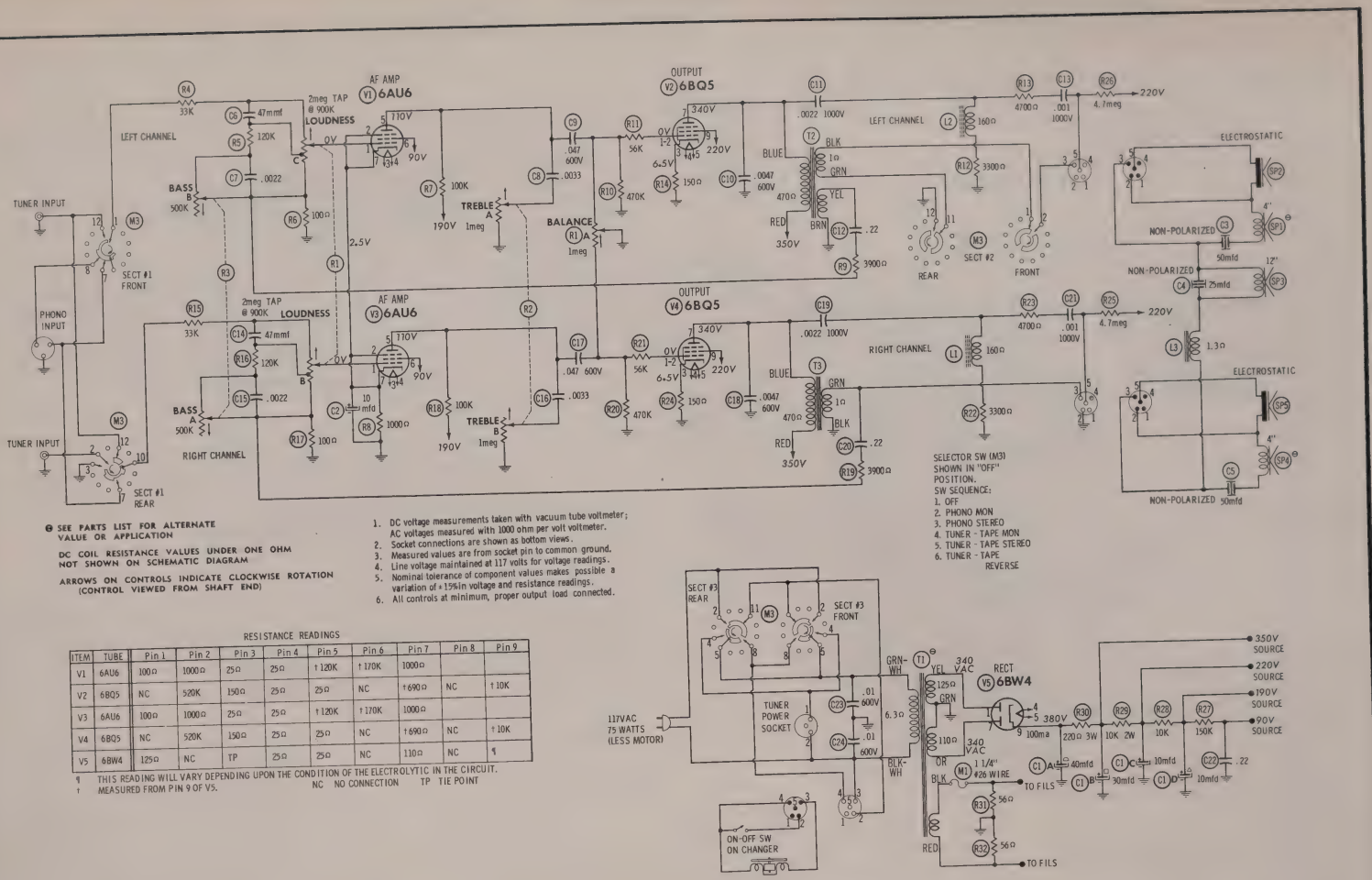
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-5617-2	Balance
Knob	28-11588-3	Bass, Treble, Function Selector

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	100Ω	1000Ω	25Ω	25Ω	†120K	†170K	1000Ω		
V2	6BQ5	NC	520K	150Ω	25Ω	25Ω	NC	†690Ω	NC	†10K
V3	6AU6	100Ω	1000Ω	25Ω	25Ω	†120K	†170K	1000Ω		
V4	6BQ5	NC	520K	150Ω	25Ω	25Ω	NC	†690Ω	NC	†10K
V5	6BW4	125Ω	NC	TP	25Ω	25Ω	NC	110Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 9 OF V5. NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC.

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PHILCO MODEL H-1714

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODEL 1217 (Ch. 528.53920)

SILVERTONE MODEL
1217 (Ch. 528.53920)

SILVERTONE MODEL
1217 (Ch. 528.53920)

TRADE NAME	Silvertone Model 1217 (Ch. 528.53920)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	12MA@9 Volts DC (No Signal, Min. Volume) 25MA@9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A3, A5, A6...GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A7, A8..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to base of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1610KC	"	"	A4	"
3.	Loop	532KC	Tuning gang fully closed.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.	"	600KC	600KC	"	A6	"
5.	"	1400KC	1400KC	"	A7	Tighten A8 and Adjust A7 for maximum output.
6.	"	"	"	"	A8	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

EIA MEMBER

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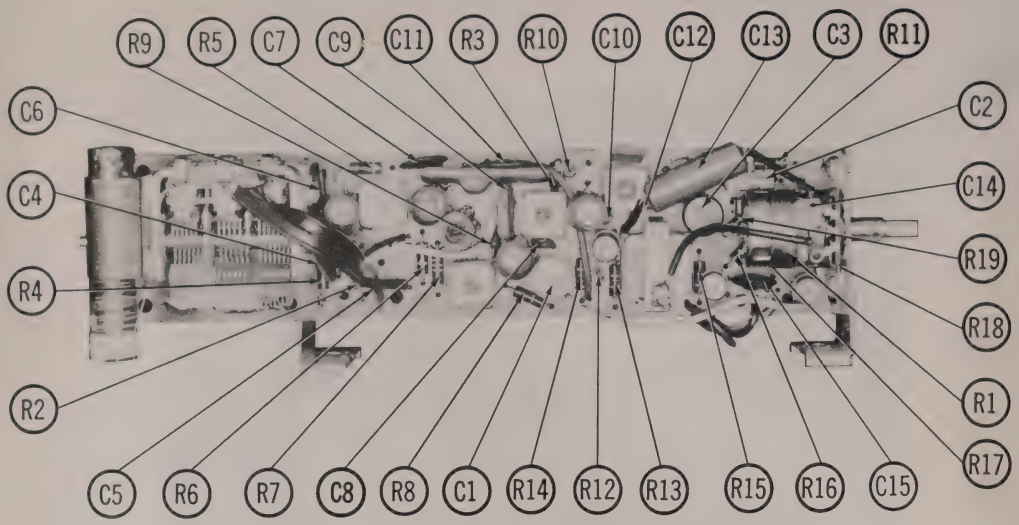
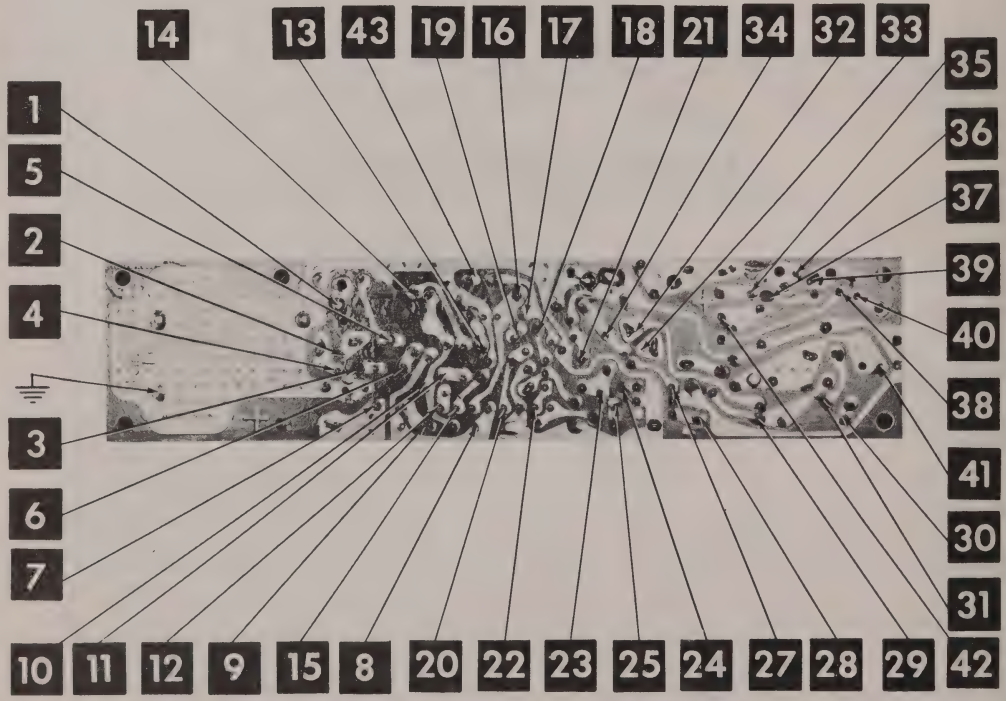
SET 515 FOLDER 15

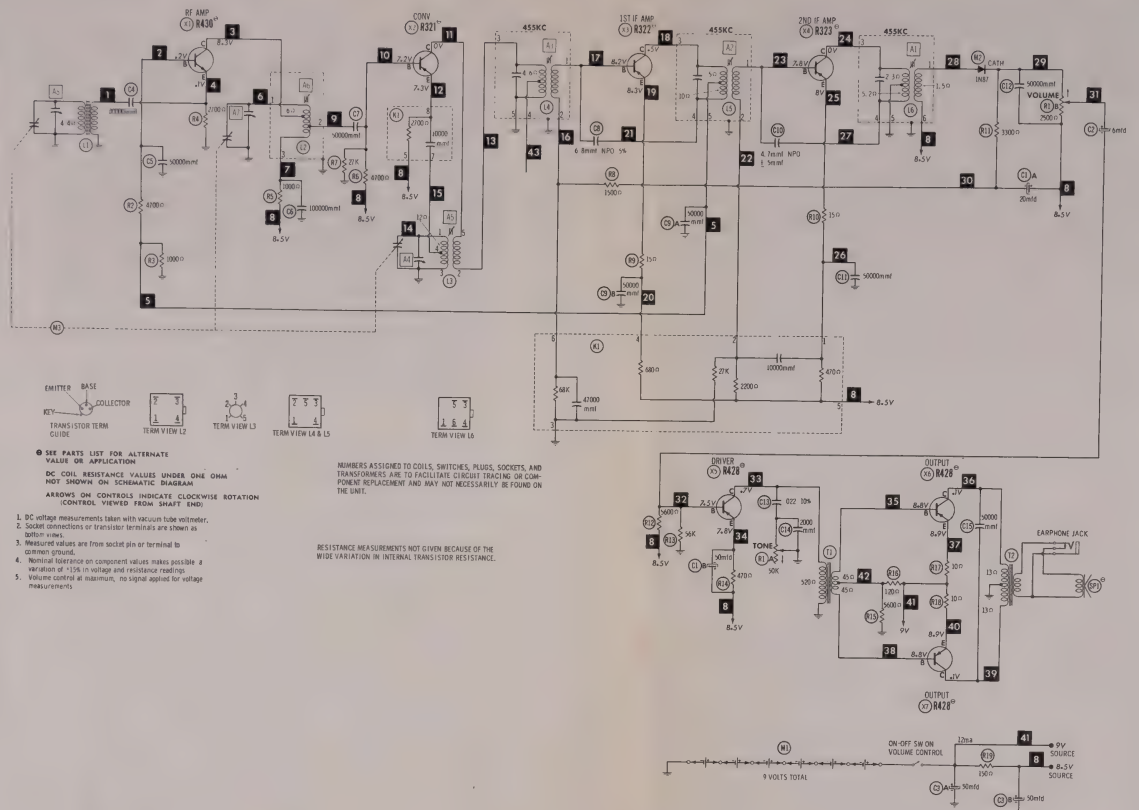


CHASSIS TOP VIEW—CAPACITOR AND RESISTOR IDENTIFICATION



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
from CIRCUIT FACT

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SILVERTONE MODEL 1217 (Ch. 528.53920)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	R430	RF Amplifier				NPN
	T44 *	RF Amplifier				NPN
X2	R321	Converter				PNP
	T46 *	Converter				PNP
X3	R322	1st IF Amplifier				PNP
	T47 *	1st IF Amplifier				PNP
X4	R323	2nd IF Amplifier				PNP
	T48 *	2nd IF Amplifier				PNP
X5	R428	Driver	2N408			PNP
	T45 *	Driver				PNP
X6	R428	Output	2N408			PNP
	T45 *	Output				PNP
X7	R428	Output	2N408			PNP
	T-45 *	Output				PNP

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	20	10	18-105-5		ECPAP2	PET2365C		VLS-2248 *	
B	50	10							
C2	6	15	18-84-5	XPP-15006	NLW6-15	TT25X6	MLV10-15	TE-1153	
C3A	50	10	18-113-5	BCD10X5050	ECPAN5	PET2370		VL-2250	
B	50	10							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	20000		C80V203AM	DA-203	H-05S2	CCD-203	TA-120	TG-S20
C5	50000 30V		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C6	100000		C80V104AM	DA-104	H-05P1		TA-010	TG-P10
C7	50000 30V		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C8	6.8 NPO 5%		NPO-DI 6.8	DTZ-6R8	C10V68C		CNO-568	10TCC-V68
C9A	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
B	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C10	4.7 NPO ± .5mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C11	50000 30V		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C12	50000 30V		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C13	.022 200V 10%		V84C2S22		PM4S22	4DP-2-223	GEM-16122	4TM-S22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C14	2000		BPD-002	DM-202	BYA10D2	CCD-202	B-220	10TS-D20
C15	50000 30V		C80V503AM	DA-503	H-05S5		TA-150	TG-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	50K		24-379-0					Tone
B	2500Ω							Volume
C	Switch							Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4700Ω	
R3	1000Ω	
R4	2700Ω	
R5	1000Ω	
R6	4700Ω	
R7	27K	

ITEM No.	RATING	REMARKS
R8	1500Ω	
R9	15Ω	
R10	15Ω	
R11	3300Ω	
R12	5600Ω	
R13	56K	

ITEM No.	RATING	REMARKS
R14	470Ω	
R15	5600Ω	
R16	120Ω	
R17	10Ω	
R18	10Ω	
R19	150Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	82-177-0				
L2	RF Trans.	10-27-0				
L3	Osc.	10-66-4				
L4	1st IF Trans.	10-131-2				
L5	2nd IF Trans.	10-124-2				
L6	3rd IF Trans.	10-137-2				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	80-111-1					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	300Ω CT	3-4Ω	80-129-1					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	33-475-4A *	5A07	* Includes T2.
	5"	PM	3-4Ω	33-475-4 ‡		‡ Alternate Part Number.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Converter - IF Bias	10000mmf, 10000mmf, 47000mmf, 470Ω, 680Ω, 2200Ω, 2700Ω, 27K, 68K	13-34-3	Centralab PC400

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	6445 *		230 *		A100 *		M-13R *	* 6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SILVERTONE PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N87			1N87	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap.	19-35-3	2 Gang
	Printed Board	84-9306-0	Assembly, Complete, Includes Transistors & Components
	Printed Board	25-35-1	Less Transistors & Components

CABINETS & CABINET PARTS

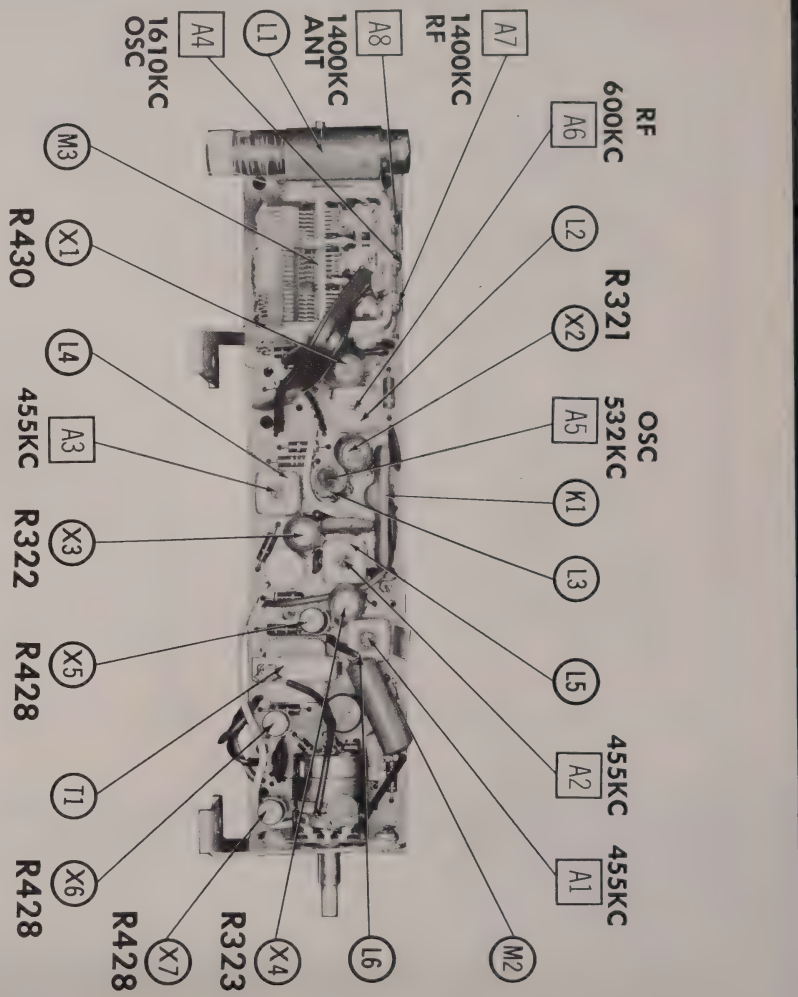
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1347-0	Tuning
Knob	52-1459-0	Tuning Indicator
Knob	52-1349-0	Volume
Knob	52-1345-0	Tone
Cabinet	42-115-1	
Handle	49-739	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

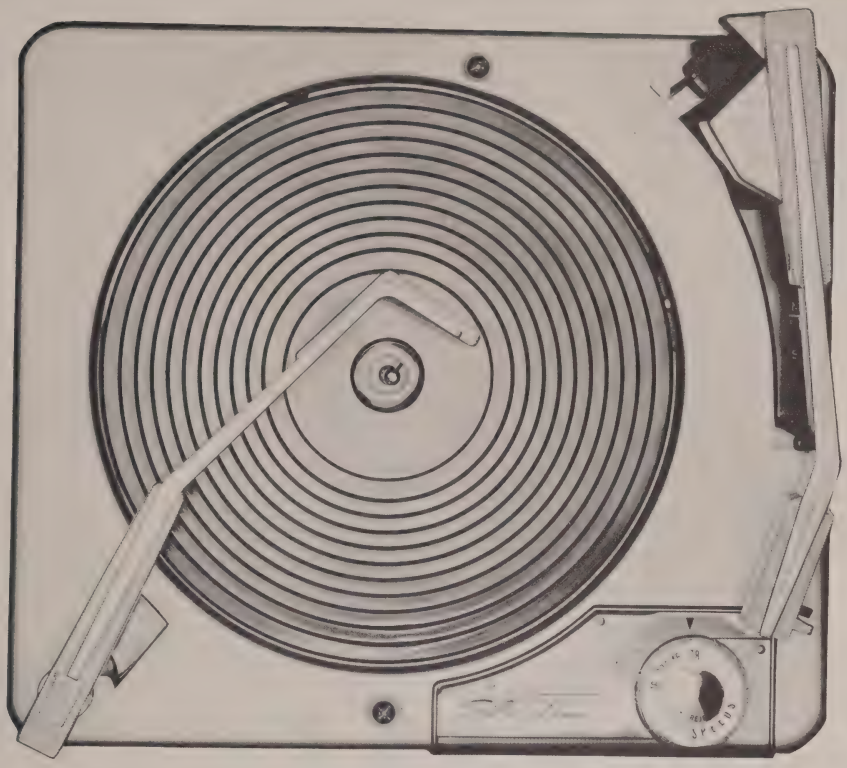
CHASSIS—TOP VIEW



PHOTOFACT® Folder

SILVERTONE
RECORD CHANGER

SILVERTONE
RECORD CHANGER



SILVERTONE
RECORD CHANGER

GENERAL INFORMATION

Silvertone record changers (see page 2 for model coverage) automatically change as many as ten 12" records, twelve 10" records, ten 7" 33 1/3-rpm records, or fifteen 7" 45-rpm, or any assortment of ten 7", 10", and 12" records of the same speed.

Seven-inch 45-rpm records can be played by inserting an adaptor in the center hole of the record or with a special 45-rpm spindle available as an accessory.

Connect these changers to an outlet supplying 117 volts, 60 cycles AC only.

Supplied By:

Sears Roebuck & Company
925 South Homan Avenue
Chicago 7, Illinois

SET 515 FOLDER 16

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

EIA MEMBER

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CQ445

MODEL COVERAGE

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528.56665	Page 12-F
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528.57361	Page 20-CC
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528.57371	Page 19-BB

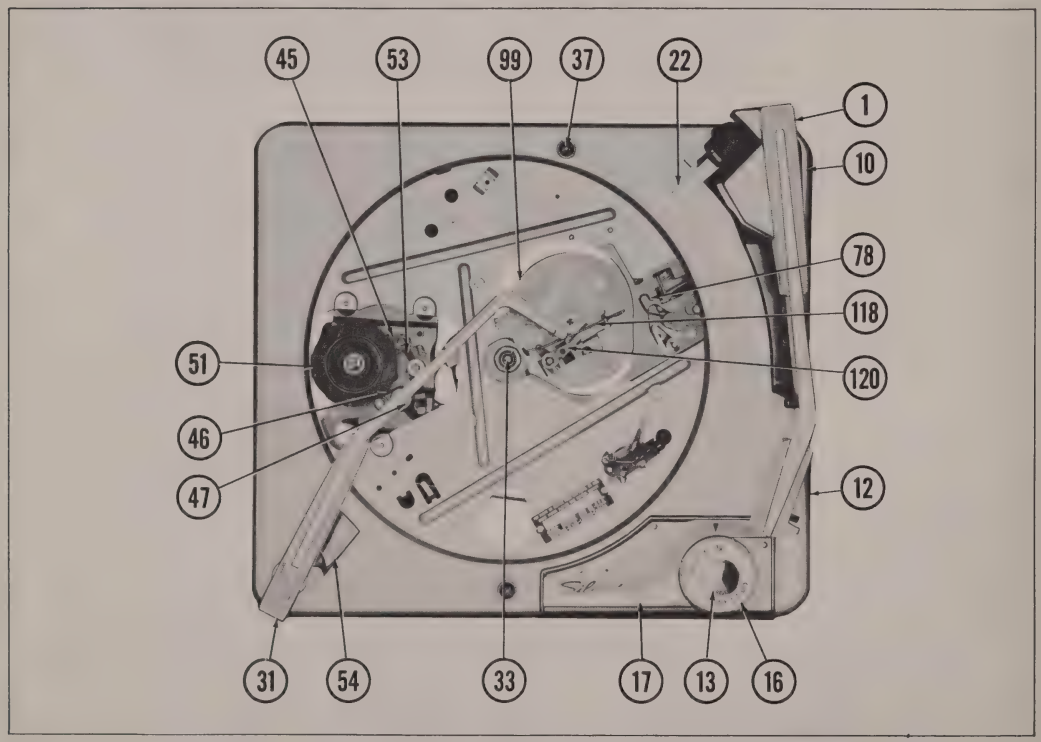


FIG.1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

PREPARING FOR OPERATION

Shipping Screws

The record changer must be floating freely on its mounting springs (109) before operating. Turn screws (37) fully clockwise to float the changer.

Leveling Record Changer

The record changer should be level for best results. Use a suitable level on baseplate and shims can be used under the baseplate or cabinet to achieve a perfect level.

OPERATING INSTRUCTIONS

Loading

1. Raise the record balance arm (31) up until it clears spindle (33). Swing it to the left until its locating pin drops into the locating groove of record balance arm housing (54).

2. Place records on spindle (33) and lower to offset shelf. Hold records level and place record balance arm (31) over records.

Playing

1. Set the speed selector to the type of records to be played.

2. Turn the On-Off-Reject control to the On-Reject position and release. The records will automatically play and the mechanism will shut off after the last record is played.

Rejecting

To reject a record, turn On-Off-Reject knob to Reject and slowly release to On position.

NOTE: When changer is to be out of service for any period of time, it should be left in neutral. This position is identified by the letter N engraved on the speed control knob. The motor shaft and drive wheel do not come into contact when in this position, thereby preventing any flat spots from developing on the tire.

ADJUSTMENTS

Tone Arm Height

To adjust tone arm height, turn height adjustment screw (under tone arm) clockwise to lower; counterclockwise to raise tone arm.

NOTE: Do not over adjust. The tone arm should just clear the bottom of the record stack when properly adjusted.

Needle Setdown

Lift tone arm upward about 1" from its rest post. The set-down adjusting screw (4) is accessible under the rear of the tone arm. Adjust so the needle comes to rest on the lead-in groove, using any size record. To move needle away from center, turn screw clockwise and to move needle toward the center, turn screw counterclockwise.

CHANGE CYCLE

These changers are equipped with a velocity trip mechanism. The change cycle is started by the faster inward motion of the tone arm when the needle enters the leadout groove at the end of the record.

Tone arm assembly (1) and tone arm actuating lever (68) are secured at opposite ends of the tone arm shaft so that they move in unison. As tone arm nears end of record, tone arm actuating lever (68) pushes long push trip rod (70). This engages short push trip rod (118), rotating pawl locator (120) to move trip pawl (121) toward turntable hub. While a record is playing, small motions of trip pawl (121) are not sufficient to trip the mechanism because on each revolution of the turntable, wiping action by trip cam (point A on Exploded View) moves trip pawl (121) back far enough to clear the trip cam.

When the needle enters the leadout groove, causing the tone arm to advance rapidly toward the spindle, trip pawl (121) is moved far enough to engage trip cam (point A on Exploded View). As trip cam engages trip pawl (121), cam gear (99) is pushed counterclockwise until it contacts the serrated portions of the turntable hub. When the turntable rotates, cam gear (99) rotates, pushing main slide (73) away from the spindle.

As main slide (73) begins to move, the cam surface (point B on Exploded View) pushes lift shaft (8) upward, raising the tone arm clear of record. At the same time, tone arm spring (74) contacts tone arm actuating lever (68) swinging tone arm clear of turntable.

As cam gear (99) continues to rotate, the positioning stud on main slide (73) contacts and moves pawl locator (120) across cutout in cam gear (99), resetting trip pawl (121) for the next change cycle.

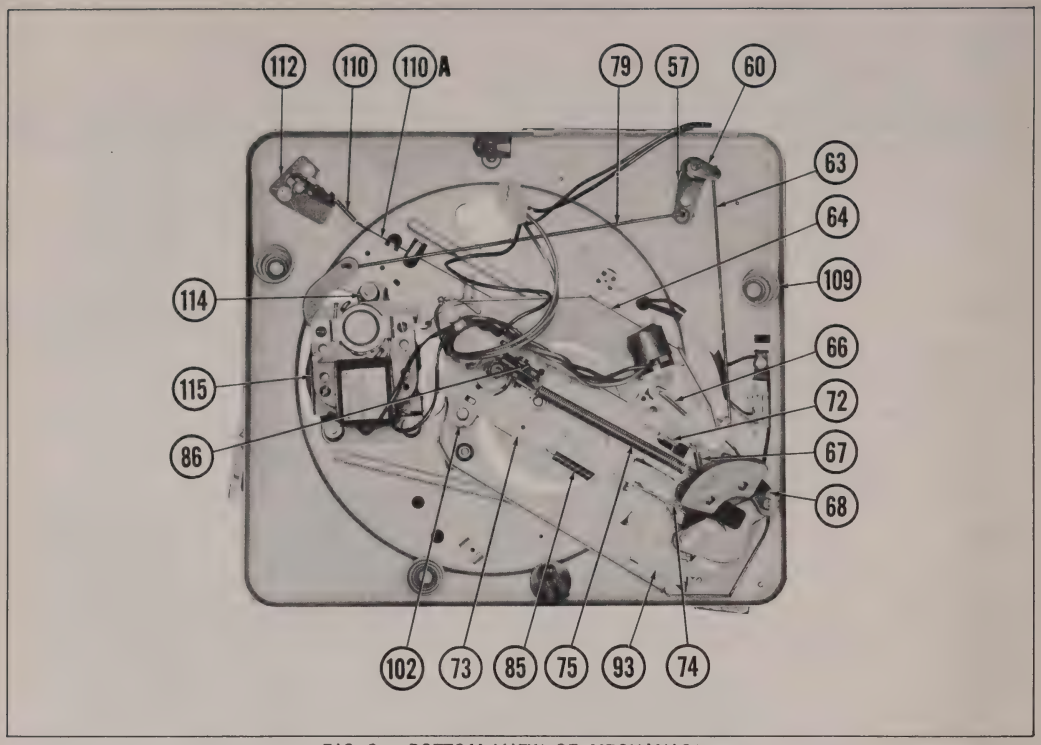


FIG.2 BOTTOM VIEW OF MECHANISM

At the same time, lift shaft (8) rides down the incline on rear of main slide (73), allowing upper selector lever assembly (30) to pivot upward and friction slide (28) to be pushed downward by friction slide selector spring (25). As upper selector assembly (30) pivots outwardly, positioning rod (29) drops down in front of tabs on lower selector assembly (82).

The front edge of slot (point C on Exploded View) in main slide (73) now contacts ejector link on spindle mounting bracket (102). Ejector link moves pushoff shaft (100) upward, actuating spindle assembly (33), dropping a record onto the turntable.

Simultaneously, the stud on tone arm actuating lever (68) engages lower selector assembly (82) moving it clear of locking lever (89). At this time, main slide (73) moves toward spindle.

If a 7" record is being changed, positioning rod (29) remains in front of the 12" and 10" selector levers, preventing the levers from engaging with stud on tone arm actuating lever (68). The 7" selector lever is now free to move against stud on tone arm actuating lever (68).

If a 10" record is being changed, the edge of the record strikes the selector lever arm on upper selector assembly (30), moving it down far enough to lift positioning rod (29) clear of the 10" selector lever (part of item 30). In this position, the 12" selector lever is locked in position, and 7" and 10" selector levers contact the stud on tone arm actuating lever (68). Since setdown step in 10" selector lever is nearer the stud, it will engage the setdown step in 10" selector lever first, assuring proper setdown point for 10" records.

If a 12" record is being changed, edge of record strikes selector lever arm on upper selector assembly (30), lifting positioning rod (29) clear of all three selector levers. In this position, the stud on tone arm actuating lever (68) engages with setdown step in 12" selector lever first, positioning tone arm for 12" setdown point.

As main slide (73) continues moving toward the spindle, one of the selector levers that has been positioned by the size record being changed engages stud on tone arm actuating lever (68). This pushes the tone arm in over the turntable by pressure applied by tone arm positioning spring (67), until the stud engages the setdown step in lower selector assembly (82), stopping inward travel on tone arm. The tone arm is then lowered to the lead-in groove of the record as lift shaft (8) rides down cam surface (point B on Exploded View) on main slide (73).

As the tone arm is lowered to the record, stud on rear of main slide (73) contacts the lower selector assembly (82) and pushes it back far enough to release the setdown step from the stud on tone arm actuating lever (68), permitting the tone arm to ride freely across the record.

At this time, stud on rear of main slide (73) pushes locking arm (90), in turn moving locking lever (89) far enough to engage pin on lower selector assembly in the out of cycle position.

As main slide (73) nears the end of its travel, index pin on bottom of cam gear (99) rides into the detent of the cam latch, preventing cam gear (99) from engaging with the turntable hub until the next change cycle is started.

As soon as the last record has been dropped, record balance arm (31) drops below the shelf on spindle assembly (33), and record balance arm shaft contacts the shutoff lever on automatic shutoff assembly (112). After last record has finished playing, the change cycle starts again; however, lever and stud assembly (93) is pivoted inward due to the automatic shutoff rod (63), which in turn was actuated by automatic shutoff spring (110) when record balance arm (31) shaft contacted the shutoff lever. As lever and stud assembly (93) pivots inward, stud on bottom moves against cam surface on reject lever (83), and tab at opposite end moves into the path of stud on tone arm actuating lever (68). As the tone arm swings outward from the turntable, stud on tone arm actuating lever (68) contacts tab on lever and stud assembly (93), stopping tone arm directly over tone arm rest, thereby preventing stud on tone arm actuating lever (68) from traveling far enough to unlock lower selector assembly (82). At this time, stud on lever and stud assembly (93) has moved behind the cam surface on reject lever (83), and as main slide (73) moves forward, stud contacts cam surface from rear, forcing reject lever (83) toward the On-Off switch (65). Lift shaft (8) now rides down the cam surface (point B on Exploded View) on main slide (73), lowering the tone arm to its rest. Simultaneously, reject lever (83) contacts the stud on On-Off switch (65), which in turn is moved far enough to shut off the switch.

TROUBLE CHART

Symptom	Cause	Remedy
Changer does not shut off after last record has been played.	1. Record balance arm (31) binding.	1. Record balance arm (31) must drop below the offset shoulder of the spindle (33) or the changer will not shut off.
	2. Automatic shutoff assembly (112) binding.	2. Clean out any foreign matter and make sure it functions freely.
	3. Automatic shutoff rod (110A) loose.	3. Replace.
No sound while playing.	1. Defective cartridge.	1. Replace
	2. Defective wiring.	2. Check pickup leads for shorted or open lead.
	3. Defective amplifier	3. Check amplifier and speaker.
	4. Loose cartridge terminal clips.	4. Remove, squeeze together slightly and replace.
Changer does not cycle when the control knob is turned to Reject.	1. Manual reject not actuating the trip.	1. (a) Turn On-Off-Reject knob (13) to Reject position and hold; see if On-Off switch (65) actuates reject lever (83). Reject lever then pushes cam gear (99), thereby starting the change cycle. (b) Check for binding on the On-Off switch (65) and reject lever (83). If binding occurs, remove foreign matter and check for freedom of parts.
Turntable does not revolve when control is turned to On.	1. No AC voltage at motor.	1. (a) Check to see if AC voltage is reaching AC leads of changer. (b) Check to see if switch is closing. (c) Check wiring and soldered terminals in the changer.
	2. Motor defective.	2. Replace motor.
	3. Drive wheel (51) not engaging turntable rim.	3. (a) Check to see if drive wheel assembly is free to contact the drive spindle and turntable rim. (b) Wipe any oil or foreign matter from inside of turntable (40). Clean the turntable rim and rubber tire of drive wheel (51) with naptha or alcohol.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Noise while record plays.	1. Motor rumble.	1. If a low pitched rumbling sound comes from the loudspeaker while a record is being played, check motor grommets to be sure the motor is freely suspended on them. Motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an unbalanced motor rotor; replace motor in this case.
	2. Defective turntable ball bearing race (36).	2. Check for: Foreign matter in the bearing, defective ball bearing race, binding between balls and ball retainer, or rough surface on washers. Clean ball bearings, bearing race, and thrust washers (34); lubricate with light mineral oil.
	3. Defective drive wheel (51).	3. A rapid thumping sound while the motor is running may indicate a flat spot on drive wheel (51). If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the drive wheel. If the surface of the rubber tire is not smooth and even, replace.
Record does not drop when changer cycles.	1. Pushoff shaft (100) broken or bent.	1. Replace pushoff shaft (100).
	2. Adjustment screw (107) not properly adjusted.	2. Adjust adjustment screw (107) so it actuates pushoff shaft (100) properly.
Needle does not set down on 10" record.	1. Tone arm not adjusted properly.	1. See "Adjustments".
	2. Lower selector assembly (82) and upper selector assembly (30) not operating properly.	2. Check for binding and foreign matter in lower selector (82) and in upper selector assembly (30).

PARTS LISTS ON PAGES 8 THRU 20 ARE SUPPLEMENTAL TO CHASSIS 528.57300. REFER TO THE SPECIFIC CHASSIS FOR PARTS. IF NOT LISTED, THEN REFER TO CHASSIS 528.57300

MECHANICAL PARTS LIST

Chassis No. 528.57300

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	84-11620	Tone Arm Ass'y. (Inc. 2 thru 5)	9	57-810217	Screw, Mach. (No. 8 x 5/8" Phil. Rnd. Hd.)
2		Tension Spring			
3	70-288-0	Friction Spring	10	21-166-1	Selector Housing and Tone Arm Rest
4	97-611	Screw (No. 6-40 x 1/4" Sltd. Rnd. Hd.)	11	22-135-2	Palnut (1/2 x 20 x 1/4")
5		Tone Arm Hinge Ass'y.	12		Motorboard
6	83-1240	Counter Balance Weight	13	52-1237-0	On/Off-Reject Knob
7	57-412228	Screw, T.C. (No. 4 x 3/4" Phil. Flt. Hd.)	14	22-57-1	"C" Washer
			15	22-67-1	"C" Washer
8	39-19-3	Lift Shaft	16	52-1238-0	Speed Control Knob

Chassis No. 528. 57300 (Con't)

Ref. No.	Part No.	Description
17	40-201-0	Escutcheon
18	11-1520	Cartridge Mounting Bracket
19	57-203291	Screw (2-56 x 3/16" Phil. Pan Hd.) (2)
20	33-333-0	Cartridge
21	22-44-1	"C" Washer
22	84-3920	Upper Selector Arm Assembly Swivel
23	39-31-0	Lift Rod
24		Upper Selector Bracket
25	70-345-0	Friction Slide Selector Spring
26	57-803211	Screw, Mach. (No. 8-32 x 3/16" Phil. Rnd. Hd.)
27	70-301-0	Clutch Compression Spring
28	22-51-4	Friction Slide
29	39-36-3	Positioning Rod
30		Upper Selector Ass'y.
31	84-6327	Record Balance Arm
32	22-34-1	"E" Washer
33	84-3872	Spindle
34		Thrust Washer
35	28-106-0	"O" Ring Spacer
36	26-3-0	Ball Bearing Race
37	97-826	Special Screw (Rear)
38	57-804277	Screw, Mach. (No. 8-32 x 1/4" Hex. Hd.) (2)
39	28-253	Turntable Boot
40	84-9046	Turntable and Hub Ass'y.
41	22-44-1	"C" Washer
42	58-343	Cup Washer
43	70-313-0	Follower Spring
44	22-134-4	Link Follower
45	22-66-4	Drive Tension Lever
46	83-1342	Motor Drive Belt
47	39-58-0	Speed Adaptor
48	58-374	Felt Washer
49	22-44-1	"C" Washer
50	58-346	Fiber Washer
51	39-57-0	Drive Wheel
52	58-346	Fiber Washer
53	70-400-0	Drive Tension Spring
54	21-38-1	Record Balance Arm Housing
55	22-56-2	Tinnerman Clip
56	57-605279	Screw, T.C. (No. 6 X 5/16 Hex. Hd.)
57	84-3952	Speed Shaft and Lever
58	37-113-3	Rubber Grommet
59	70-283-0	Anti Rattle Spring
60	84-4052	On/Off Shaft and Lever
61	22-69-1	"C" Washer
62	58-329	Thrust Washer
63	39-24-3	Shut-Off Rod (Short)
64		Sub Base Mech. (Complete)
65	84-7838	On/Off Switch
66	70-373-0	On/Off Switch Spring
67	70-267-0	Tone Arm Positioning Spring
68	84-6755	Tone Arm Actuating Lever
69	22-70-1	Hair Pin Retainer
70	39-25-3	Push Trip Rod (Long)

Ref. No.	Part No.	Description
71	22-57-1	"C" Washer
72	70-293-0	Reject Lever Spring
73	84-7841	Main Slide
74	70-377-0	Tone Arm Spring
75	70-291-0	Slide Return Spring
76	57-402211	Screw, Mach. (No. 4-40 x 1/8" Phil. Hd.)
77	22-70-3	Lift Rod Clamp
78	39-35-3	Lift Rod
79	39-26-3	Speed Control Rod (Long)
80	97-617	Screw, Mach. (No. 6-32 x 3/16" Hex. Hd.)
81	21-63-1	Switch Cover
82	84-3875	Lower Selector Ass'y.
83		Reject Lever
84		Cam Wheel Index
85	70-242-0	Cam Wheel Index Spring
86	70-289-0	Push Off Lever Spring
87	22-74-1	"C" Washer
88	70-296-0	Retainer Spring
89	22-109-4	Locking Lever
90	22-52-4	Locking Arm
91	58-516	Cup Washer
92	22-65-1	Retainer Clip
93	84-7988	Lever and Stud Ass'y.
94	22-65-1	Retainer Clip
95		Compression Spring
96		"C" Washer
97	57-407199	Screw, T.C. (No. 4-24 x 7/16)
98	58-327	Fiber Washer
99	84-9230	Cam Assembly
100	39-28-3	Push Off Shaft
101	22-57-1	"C" Washer
102	84-4361	Spindle Mounting Bracket
103	97-740	Set Screw (No. 8-32 x 3/8")
104	97-575	Screw, Mach. (No. 8-32 x 1/4" Hex. Hd.)
105	70-285-0	Push Off Shaft Spring
106	22-56-1	"C" Washer
107	97-607	Adjustment Screw (No. 8-32 x 15/32" Hex.)
108	56-245	Hex Nut (No. 8-32 x 3/32 x 5/16)
109	70-284-0	Compression Spring
110	70-280-0	Automatic Shut-off Spring
110A	39-210-3	Automatic Shut-off Rod
111	22-105-1	"E" Washer
112	84-6896	Automatic Shut-off
113	57-806285	Screw, T.F. (No. 8-18 x 3/8")
114	37-61-3	Motor Mounting Grommet
115	59-162	Motor (Complete)
116	22-56-1	"C" Washer
117	70-319-0	Index Spring
118	39-209-3	Push Trip Rod
119	22-68-1	"C" Washer
120	22-42-4	Pawl Locator
121	22-46-4	Trip Pawl
122	29-123-1	Clutch Arm
123	70-408-0	Tension Spring

PARTS LISTS ON PAGES 8 THRU 20 ARE SUPPLEMENTAL TO CHASSIS 528. 57300. REFER TO THE SPECIFIC CHASSIS FOR PARTS, IF NOT LISTED, THEN REFER TO CHASSIS 528. 57300. ON PAGES 6-7.

A Chassis 528. 57301

Ref. No.	Part No.	Description
42	58-344	Cup Washer
43	70-314-0	Follower Spring
44	22-30-4	Link Follower
45	22-67-4	Drive Tension Lever
46	83-1168	Motor Drive Belt
47	39-19-0	Speed Adaptor
50	58-347	Fiber Washer
51	39-52-0	Drive Wheel
52	58-347	Fiber Washer
53	70-316-0	Drive Tension Spring
114	37-54-3	Motor Mounting Grommet
115	59-158	Motor (Complete)
117	70-320-0	Index Spring

B Chassis 528. 56443 & 528. 56453

Ref. No.	Part No.	Description
1	84-6891	Tone Arm
7	57-412129	Screw, #4 x 3/4" Type 25
10	21-36-1	Selector Housing and Tone Arm Rest
13	52-1122-0	On/ Off-Reject Knob
16	52-917-0	Speed Control Knob
17	40-129-0	Escutcheon
20	33-311-0	Cartridge (EV265)
37	97-544	Mounting Screw (Rear)
39	62-93-0	Turntable Boot
40	84-6895	Turntable
41	86-348	"C" Washer (Chassis 528. 56443)
	22-101-1	Hairpin Retainer (Chassis 528.56453)
42	86-343	Cup Washer (Ch. 528. 56443)
	86-344	Cup Washer (Chassis 528. 56453)
43	70-314-0	Follower Spring (Ch. 528. 56453)
44	22-29-4	Link Follower (Chassis 528. 56443)
	22-30-4	Link Follower (Chassis 528. 56453)
45	22-67-4	Drive Tension Lever (Chassis 528. 56453)
46	83-1167	Motor Drive Belt (Chassis 528.56443)
	83-1168	Motor Drive Belt (Chassis 528.56453)
47	39-18-0	Speed Adaptor (Chassis 528. 56443)
	39-19-0	Speed Adaptor (Chassis 528. 56453)
48	86-374	Felt Washer
49	86-348	"C" Washer
50	86-346	Fiber Washer (Chassis 528. 56443)
	86-347	Fiber Washer (Chassis 528. 56453)
51	39-13-0	Drive Wheel (Chassis 528. 56443)
	39-14-0	Drive Wheel (Chassis 528. 56453)
52	86-346	Fiber Washer (Chassis 528. 56443)
	86-347	Fiber Washer (Chassis 528. 56453)
53	70-315-0	Drive Tension Spring (Chassis 528. 56443)
	70-316-0	Drive Tension Spring (Chassis 528. 56453)
62	86-329	Thrust Washer
65	84-6552	On/ Off Switch
66	70-247-0	On/ Off Switch Spring
73	84-6697	Main Slide
74	70-341-0	Actuating Lever Return Spring
89	22-32-4	Locking Lever
91	58-331	Flat Washer
93	84-4350	Rest Position Lever
97	57-407169	Screw, #4-24 x 7/16"
98	86-327	Fiber Washer
99	84-6931	Cam Ass'y.
103	97-741	Set Screw, #8-32 x 7/32"
114	37-7-3	Motor Mounting Grommet (Chassis 528. 56443)
	37-8-3	Motor Mounting Grommet (Ch 528. 56453)
115	59-72	Motor (Complete)(Chassis 528.56443)
	59-89	Motor (Complete) (Chassis 528.56453)
117	70-320-0	Index Spring (Chassis 528. 56453)
118	39-23-3	Push Trip Rod (Short)
123	70-294-0	Clutch Spring

MECHANICAL PARTS LIST (CON'T.)

C Chassis Nos. 528.5662 & 528.56663

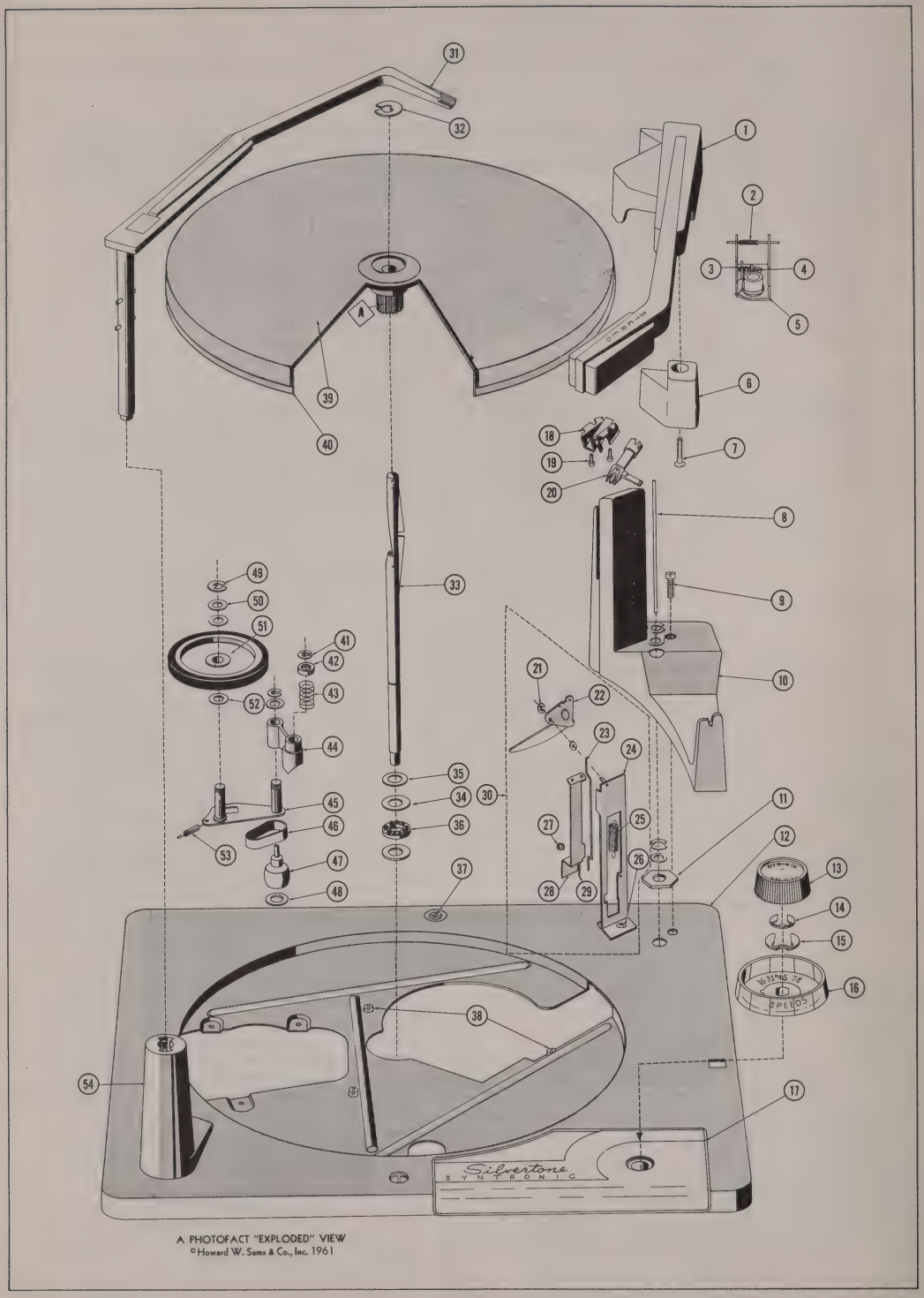
Ref. No.	Part No.	Description
1	84-7454	Tone Arm Ass'y.
10	21-112-1	Selector Housing & Tone Arm Rest
20	33-311-0	Cartridge, EV 26
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Ass'y.
41	58-348	"C" Washer (Chassis 528.56662)
	22-101-1	Hairpin Retainer (Chassis 528.56663)
42	58-344	Cup Washer (Chassis 528.56663)
43	70-314-0	Follower Spring (Chassis 528.56663)
44	22-29-4	Link Follower (Chassis 528.56662)
	22-30-4	Link Follower (Chassis 528.56663)
45	22-67-4	Drive Tension Lever (Chassis 528.56663)
46	83-1167	Motor Drive Belt (Chassis 528.56662)
	83-1168	Motor Drive Belt (Chassis 528.56663)
47	39-18-0	Speed Adaptor (Chassis 528.56662)
	39-19-0	Speed Adaptor (Chassis 528.56663)
49	58-348	"C" Washer (Chassis 528.56662)
	22-101-1	Hairpin Retainer (Chassis 528.56663)
50	58-347	Fiber Washer (Chassis 528.56663)
51	39-13-0	Drive Wheel (Chassis 528.56662)
	39-14-0	Drive Wheel (Chassis 528.56663)
52	58-347	Fiber Washer (Chassis 528.56663)
53	70-315-0	Drive Tension Spring (Chassis 528.56662)
	70-316-0	Drive Tension Spring (Chassis 528.56663)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-7680	Cam Ass'y.
114	37-7-3	Motor Mounting Grommet (Chassis 528.56662)
	37-8-3	Motor Mounting Grommet (Chassis 528.56663)
115	59-72	Motor (Chassis 528.56662)
	59-89	Motor (Chassis 528.56663)
117	70-320-0	Index Spring (Chassis 528.56663)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

D Chassis Nos. 528.56762 and 528.56763

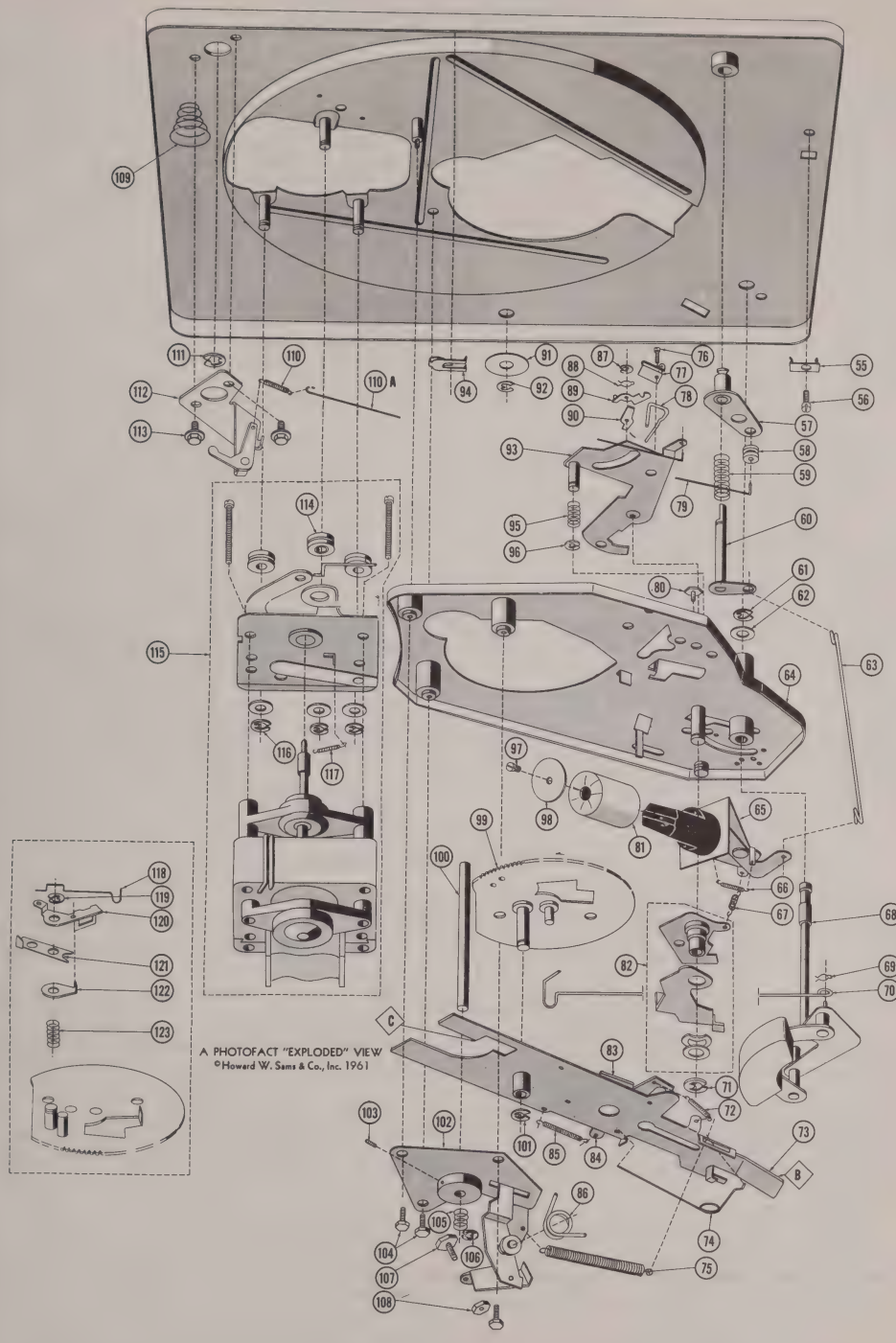
Ref. No.	Part No.	Description
1	84-7646	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-314-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	22-101-1	Hairpin Retainer (Ch. 528.56762)
42	58-344	Cup Washer (Ch. 528.56762)
43	70-314-0	Follower Spring (Ch. 528.56762)
44	22-29-4	Link Follower (Ch. 528.56763)
45	22-67-4	Drive Tension Lever (Ch. 528.56762)
46	83-1167	Motor Drive Belt (Ch. 528.56763)
47	39-59-0	Speed Adaptor (Ch. 528.56762)
	39-18-0	Speed Adaptor (Ch. 528.56763)
49	22-101-1	Hairpin Retainer (Ch. 528.56762)
50	58-347	Fiber Washer (Ch. 528.56762)
51	39-52-0	Drive Wheel (Ch. 528.56763)
53	70-315-0	Drive Tension Spring (Ch. 528.56763)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-9054	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56763)
115	59-158	Motor (Ch. 528.56763)
117	70-320-0	Index Spring (Ch. 528.56762)
123	70-294-0	Clutch Spring

E Chassis Nos. 528.56642 & 528.56643

Ref. No.	Part No.	Description
1	84-7646	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-112-	Selector Housing and Tone Arm Rest
20	33-314-0	Cartridge
39	62-88-0	Turntable Boot
41	22-101-1	Hairpin Retainer (Ch. 528.56642)
42	58-344	Cup Washer (Ch. 528.56642)
43	70-314-0	Follower Spring (Ch. 528.56642)
44	22-29-4	Link Follower (Ch. 528.56643)
46	83-1167	Motor Drive Belt (Ch. 528.56643)
47	39-59-0	Speed Adaptor (Ch. 528.56642)
	39-18-0	Speed Adaptor (Ch. 528.56643)
50	58-347	Fiber Washer (Ch. 528.56642)
51	39-52-0	Drive Wheel (Ch. 528.56643)
53	70-315-0	Drive Tension Spring (Ch. 528.56643)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-7680	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56643)
115	59-158	Motor (Ch. 528.56643)
117	70-320-0	Index Spring (Ch. 528.56642)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring



EXPLODED VIEW OF PARTS ABOVE BASE PLATE



EXPLODED VIEW OF PARTS BELOW BASE PLATE

F Chassis Nos. 528.56664 and 528.56665

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge, EV #26
39	62-88-0	Turntable Boot
41	22-101-1	Hairpin Retainer (Ch. 528.56664)
42	58-344	Cup Washer (Ch. 528.56664)
43	70-314-0	Follower Spring (Ch. 528.56664)
44	22-29-4	Link Follower (Ch. 528.56665)
45	22-67-4	Drive Tension Lever (Ch. 528.56664)
46	83-1167	Motor Drive Belt (Ch. 528.56665)
47	39-18-0	Speed Adaptor (Ch. 528.56665)
49	22-101-1	Hairpin Retainer (Ch. 528.56664)
50	58-347	Fiber Washer (Ch. 528.56664)
51	39-52-0	Drive Wheel (Ch. 528.56665)
53	70-315-0	Drive Tension Spring (Ch. 528.56665)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-7680	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56665)
115	59-158	Motor (Ch. 528.56665)
117	70-320-0	Index Spring (Ch. 528.56664)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

G Chassis Nos. 528.57320 & 528.57321

Ref. No.	Part No.	Description
1	84-7647	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-319-0	Cartridge
42	58-344	Cup Washer (Ch. 528.57321)
43	70-314-0	Follower Spring (Ch. 528.57321)
44	22-30-4	Link Follower (Ch. 528.57321)
45	70-316-0	Drive Tension Spring (Ch. 528.57321)
46	83-1168	Motor Drive Belt (Ch. 528.57321)
47	39-19-0	Speed Adaptor (Ch. 528.57321)
50	58-347	Fiber Washer (Ch. 528.57321)
51	39-52-0	Drive Wheel (Ch. 528.57321)
53	70-316-0	Drive Tension Spring (Ch. 528.57321)
68	84-7515	Tone Arm Actuating Lever
114	37-54-3	Motor Mounting Grommet (Ch. 528.57321)
115	59-158	Motor (Ch. 528.57321
117	70-320-0	Index Spring (Ch. 528.57321)

Chassis Nos. 528.57340 & 528.57341

H Chassis No. 528.57340 Part Nos. are the same as Parts for Chassis 528.57300

Ref. No.	Part No.	Description
42	58-344	Cup Washer (Ch. 528.57341)
43	70-314-0	Follower Spring (Ch. 528.57341)
44	22-30-4	Link Follower (Ch. 528.57341)
45	22-67-4	Drive Tension Lever (Ch. 528.57341)
46	83-1168	Motor Drive Belt (Ch. 528.57341)
47	39-19-0	Speed Adaptor (Ch. 528.57341)
50	58-347	Fiber Washer (Ch. 528.57341)
51	39-52-0	Drive Wheel (Ch. 528.57341)
53	70-316-0	Drive Tension Spring (Ch. 528.57341)
114	37-54-3	Motor Mounting Grommet (Ch. 528.57341)
115	59-158	Motor (Ch. 528.57341)
117	70-320-0	Index Spring (Ch. 528.57341)

I Chassis Nos. 528.57350 & 528.57351

Ref. No.	Part No.	Description
1	84-7646	Tone Arm Assembly
6	83-1305	Counter Balance Weight
20	33-314-0	Cartridge
42	58-344	Cup Washer (Ch. 528.57351)
43	70-314-0	Follower Spring (Ch. 528.57351)
44	22-30-4	Link Follower (Ch. 528.57351)

MECHANICAL PARTS LIST (CON'T.)

Chassis Nos. 528.57350 & 528.57351 (Con't)

Ref. No.	Part No.	Description
45	22-67-4	Drive Tension Lever (Ch. 528.57351)
46	83-1168	Motor Drive Belt (Ch. 528.57351)
47	39-19-0	Speed Adaptor (Ch. 528.57351)
50	58-347	Fiber Washer (Ch. 528.57351)
51	39-52-0	Drive Wheel (Ch. 528.57351)
53	70-316-0	Drive Tension Spring (Ch. 528.57351)
65	84-11850	On/Off Switch
68	84-7515	Tone Arm Actuating Lever
108	56-215	Hex Nut (#8-32 x 3/32 x 5/16)
114	37-54-3	Motor Mounting Grommet (Ch. 528.57351)
115	59-158	Motor (Ch. 528.57351)
117	70-320-0	Index Spring (Ch. 528.57351)

J — Chassis Nos. 528.56580 & 528.56590

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
7	57-412129	Screw #4 x 3/4, Type 25
10	21-36-1	Selector Housing and Tone Arm Rest
13	52-1122-0	On/Off Reject Knob
16	52-917-0	Speed Control Knob
17	40-129-0	Speed Escutcheon
20	33-311-0	Cartridge
37	97-544	Mounting Screw — Rear
39	62-93-0	Turntable Boot
40	84-6895	Turntable
41	86-348	"C" Retainer (Ch. 528.56580)
	22-101-1	Hairpin Retainer (Ch. 528.56590)
42	86-343	Cup Washer (Ch. 528.56580)
	86-344	Cup Washer (Ch. 528.56590)
43	70-314-0	Follower Spring (Ch. 528.56590)
44	22-29-4	Link Follower (Ch. 528.56580)
	22-30-4	Link Follower (Ch. 528.56590)
45	22-67-4	Drive Tension Lever (Ch. 528.56590)
46	83-1167	Motor Drive Belt (Ch. 528.56580)
	83-1168	Motor Drive Belt (Ch. 528.56590)
47	39-18-0	Speed Adaptor (Ch. 528.56580)
	39-19-0	Speed Adaptor (Ch. 528.56590)
48	86-374	Felt Washer
49	86-348	"C" Retainer (Ch. 528.56580)
	86-345	"C" Retainer (Ch. 528.56590)
50	86-346	Fiber Washer (Ch. 528.56580)
	86-347	Fiber Washer (Ch. 528.56590)
51	39-13-0	Drive Wheel (Ch. 528.56580)
	39-14-0	Drive Wheel (Ch. 528.56590)
53	70-315-0	Drive Tension Spring (Ch. 528.56580)
	70-316-0	Drive Tension Spring (Ch. 528.56590)
65	84-6552	On/Off Switch
66	70-247-0	On/Off Switch Spring
73	84-6697	Main Slide
74	70-341-0	Actuating Lever Return Spring
89	22-32-4	Locking Lever
93	84-4350	Rest Position Lever
98	86-327	Fiber Washer
99	84-6931	Cam Assembly
103	97-741	Set Screw — #8-32 x 3/16
114	37-7-3	Motor Mounting Grommet (Ch. 528.56580)
	37-8-3	Motor Mounting Grommet (Ch. 528.56590)
115	59-72	Motor (Ch. 528.56580)
	59-89	Motor (Ch. 528.56590)
117	70-320-0	Index Spring (Ch. 528.56590)
118	39-23-3	Push Trip Rod (Short)
123	70-294-0	Clutch Spring

K — Chassis Nos. 528.56640 & 528.56641

Ref. No.	Part No.	Description
1	84-7646	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-314-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	58-348	"C" Retainer (Ch. 528.56640)
	22-101-1	Hairpin Retainer (Ch. 528.56641)
42	58-344	Cup Washer (Ch. 528.56641)
43	70-314-0	Follower Spring (Ch. 528.56641)
44	22-29-4	Link Follower (Ch. 528.56640)
	22-30-4	Link Follower (Ch. 528.56641)
45	22-67-4	Drive Tension Lever (Ch. 528.56641)
46	83-1167	Motor Drive Belt (Ch. 528.56640)
	83-1168	Motor Drive Belt (Ch. 528.56641)
47	39-18-0	Speed Adaptor (Ch. 528.56640)
	39-19-0	Speed Adaptor (Ch. 528.56641)
49	58-348	"C" Retainer (Ch. 528.56640)
	58-345	"C" Retainer (Ch. 528.56641)
50	58-347	Fiber Washer (Ch. 528.56641)
51	39-13-0	Drive Wheel (Ch. 528.56640)
	39-14-0	Drive Wheel (Ch. 528.56641)
53	70-315-0	Drive Tension Spring (Ch. 528.56640)
	70-316-0	Drive Tension Spring (Ch. 528.56641)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
99	84-7722	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56640)
	37-8-3	Motor Mtg. Grommet (Ch. 528.56641)

Chassis Nos. 528.56640 & 528.56641 (Con't)

Ref. No.	Part No.	Description
115	59-72	Motor (Ch. 528.56640)
	59-89	Motor (Ch. 528.56641)
117	70-320-0	Index Spring (Ch. 528.56641)
118	39-195-3	Push Trip Rod
123	70-294-0	Clutch Spring

L

Chassis Nos. 528.56660 & 528.56661

Ref. No.	Part No.	Description
1	84-7454	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	86-348	"C" Retainer (Ch. 528.56660)
	22-101-1	Hairpin Retainer (Ch. 528.56661)
42	86-343	Cup Washer (Ch. 528.56660)
	86-344	Cup Washer (Ch. 528.56661)
43	70-314-0	Follower Spring (Ch. 528.56661)
44	22-29-4	Link Follower (Ch. 528.56660)
	22-30-4	Link Follower (Ch. 528.56661)
45	22-67-4	Drive Tension Lever (Ch. 528.56661)
46	83-1167	Motor Drive Belt (Ch. 528.56660)
	83-1168	Motor Drive Belt (Ch. 528.56661)
47	39-18-0	Speed Adaptor (Ch. 528.56660)
	39-19-0	Speed Adaptor (Ch. 528.56661)
48	86-374	Felt Washer
49	86-348	"C" Retainer (Ch. 528.56660)
	86-345	"C" Retainer (Ch. 528.56661)
50	86-346	Fiber Washer (Ch. 528.56660)
	86-347	Fiber Washer (Ch. 528.56661)
51	39-13-0	Drive Wheel (Ch. 528.56660)
	39-14-0	Drive Wheel (Ch. 528.56661)
53	70-315-0	Drive Tension Spring(Ch. 528.56660)
	70-316-0	Drive Tension Spring(Ch. 528.56661)
54	21-110-1	Hold Down Arm Housing
65	84-6552	On/ Off Switch
66	70-247-0	On/ Off Switch Spring
68	84-7515	Tone Arm Actuating Lever
73	84-6697	Main Slide
74	70-341-0	Positioning Slide Spring
93	84-7725	Lever Stud Assembly
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-7680	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56660)
	37-8-3	Motor Mounting Grommet (Ch. 528.56661)
115	59-72	Motor (Ch. 528.56660)
	59-89	Motor (Ch. 528.56661)
117	70-320-0	Index Spring (Ch. 528.56661)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

M

Chassis Nos. 528.56842 & 528.56843

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-319-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	58-348	"C" Retainer (Ch. 528.56842)
	22-101-1	Hairpin Retainer (Ch. 528.56843)
42	58-344	Cup Washer (Ch. 528.56843)
43	70-314-0	Follower Spring (Ch. 528.56843)
44	22-29-4	Link Follower (Ch. 528.56842)
	22-30-4	Link Follower (Ch. 528.56843)
45	22-67-4	Drive Tension Lever (Ch. 528.56843)
46	83-1167	Motor Drive Belt (Ch. 528.56842)
	83-1163	Motor Drive Belt (Ch. 528.56843)
47	39-18-0	Speed Adaptor (Ch. 528.56842)
	39-19-0	Speed Adaptor (Ch. 528.56843)
49	58-348	"C" Retainer (Ch. 528.56842)
	58-345	"C" Retainer (Ch. 528.56843)
50	58-347	Fiber Washer (Ch. 528.56843)
51	39-13-0	Drive Wheel (Ch. 528.56842)
	39-14-0	Drive Wheel (Ch. 528.56843)
53	70-315-0	Drive Tension Spring(Ch. 528.56842)
	70-316-0	Drive Tension Spring(Ch. 528.56843)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16
99	84-7680	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56842)
	37-8-3	Motor Mounting Grommet (Ch. 528.56843)
115	59-72	Motor (Ch. 528.56842)
	59-89	Motor (Ch. 528.56843)
117	70-320-0	Index Spring (Ch. 528.56843)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

MECHANICAL PARTS LIST (CON'T.)

Chassis Nos. 528.56844 & 528.56845

N

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-319-0	Cartridge
39	62-88-0	Turntable Boot
41	22-101-1	Hairpin Retainer (Ch. 528.56844)
42	58-344	Cup Washer (Ch. 528.56844)
43	70-314-0	Follower Spring (Ch. 528.56844)
45	22-67-4	Drive Tension Lever(Ch. 528.56844)
46	83-1167	Motor Drive Belt (Ch. 528.56845)
47	39-18-0	Speed Adaptor (Ch. 528.56845)
51	39-52-0	Drive Wheel (Ch. 528.56845)
53	70-315-0	Drive Tension Spring(Ch. 528.56845)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-7680	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56845)
115	59-158	Motor (Ch. 528.56845)
117	70-320-0	Index Spring (Ch. 528.56844)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

Chassis Nos. 528.56846 & 528.56847

O

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-319-0	Cartridge
39	62-88-0	Turntable Boot
42	58-344	Cup Washer (Ch. 528.56847)
43	70-314-0	Follower Spring (Ch.528.56847)
44	22-30-4	Link Follower (Ch. 528.56847)
45	22-67-4	Drive Tension Lever(Ch. 528.56847)
46	83-1168	Motor Drive Belt (Ch. 528.56847)
47	39-19-0	Speed Adaptor (Ch. 528.56847)
50	58-347	Fiber Washer (Ch. 528.56847)
51	39-52-0	Drive Wheel (Ch. 528.56847)
53	70-316-0	Drive Tension Spring (Ch. 528.56847)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16"
114	37-54-3	Motor Mounting Grommet (Ch. 528.56847)
115	59-158	Motor (Ch. 528.56847)
117	70-320-0	Index Spring (Ch. 528.56847)

P Chassis Nos. 528.56700 & 528.56701

Ref. No.	Part No.	Description
1	84-7454	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	58-348	"C" Washer (Ch. 528.56700)
	22-101-1	Hairpin Retainer (Ch. 528.56701)
42	58-344	Cup Washer (Ch. 528.56701)
43	70-314-0	Follower Spring (Ch. 528.56701)
44	22-29-4	Link Follower (Ch. 528.56700)
	22-30-4	Link Follower (Ch. 528.56701)
45	22-67-4	Drive Tension Lever (Ch. 528.56701)
46	83-1167	Motor Drive Belt (Ch. 528.56700)
	83-1168	Motor Drive Belt (Ch. 528.56701)
47	39-18-0	Speed Adaptor (Ch. 528.56700)
	39-19-0	Speed Adaptor (Ch. 528.56701)
49	58-348	"C" Washer (Ch. 528.56700)
	58-345	"C" Washer (Ch. 528.56701)
50	58-347	Fiber Washer (Ch. 528.56701)
51	39-13-0	Drive Wheel (Ch. 528.56700)
	39-14-0	Drive Wheel (Ch. 528.56701)
53	70-315-0	Drive Tension Spring(Ch. 528.56700)
	70-316-0	Drive Tension Spring(Ch. 528.56701)
54	21-110-1	Hold Down Arm Housing
65	84-6552	On/Off Switch
66	70-247-0	On/Off Switch Spring
73	84-6697	Main Slide
74	70-341-0	Positioning Slide Spring
93	84-7725	Lever and Stud Assembly
99	84-7722	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56700)
	37-8-3	Motor Mounting Grommet (Ch. 528.56701)
115	59-72	Motor (Ch. 528.56700)
	59-89	Motor (Ch. 528.56701)
117	70-320-0	Index Spring (Ch. 528.56701)
118	39-195-3	Push Trip Rod
123	70-294-0	Clutch Spring

Q Chassis Nos. 528.56740 & 528.56741

Ref. No.	Part No.	Description
1	84-7454	Tone Arm Assembly
20	33-311-0	Cartridge
42	58-344	Cup Washer (Ch. 528.56741)
43	70-314-0	Follower Spring (Ch. 528.56741)
44	22-30-4	Link Follower (Ch. 528.56741)
45	22-67-4	Drive Tension Lever(Ch. 528.56741)
46	83-1168	Motor Drive Belt (Ch. 528.56741)
47	39-19-0	Speed Adaptor (Ch. 528.56741)
50	58-347	Fiber Washer (Ch. 528.56741)
51	39-52-0	Drive Wheel (Ch. 528.56741)
53	70-316-0	Drive Tension Spring(Ch. 528.56741)
114	37-54-3	Motor Mounting Grommet (Ch. 528.56741)
115	59-158	Motor (Ch. 528.56741)
117	70-320-0	Index Spring (Ch. 528.56741)

R Chassis Nos. 528.56760 & 528.56761

Ref. No.	Part No.	Description
1	84-7646	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-314-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	58-348	"C" Washer (Ch. 528.56760)
	22-101-1	Hairpin Retainer (Ch. 528.56761)
42	58-344	Cup Washer (Ch. 528.56761)
43	70-314-0	Follower Spring (Ch. 528.56761)
44	22-29-4	Link Follower (Ch. 528.56760)
	22-30-4	Link Follower (Ch. 528.56761)
45	22-67-4	Drive Tension Lever(Ch. 528.56761)
46	83-1167	Motor Drive Belt (Ch. 528.56760)
	83-1168	Motor Drive Belt (Ch. 528.56761)
47	39-18-0	Speed Adaptor (Ch. 528.56760)
	39-19-0	Speed Adaptor (Ch. 528.56761)
49	58-348	"C" Washer (Ch. 528.56760)
	58-345	"C" Washer (Ch. 528.56761)
50	58-347	Fiber Washer (Ch. 528.56761)
51	39-13-0	Drive Wheel (Ch. 528.56760)
	39-14-0	Drive Wheel (Ch. 528.56761)
53	70-315-0	Drive Tension Spring(Ch. 528.56760)
	70-316-0	Drive Tension Spring(Ch. 528.56761)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-9054	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56760)
	37-8-3	Motor Mounting Grommet (Ch. 528.56761)
115	59-72	Motor (Ch. 528.56760)
	59-89	Motor (Ch. 528.56761)
117	70-320-0	Index Spring (Ch. 528.56761)
123	70-294-0	Clutch Spring

S Chassis Nos. 528.56780 & 56781

Ref. No.	Part No.	Description
1	84-7643	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
41	58-348	"C" Washer (Ch. 528.56780)
	22-101-1	Hairpin Retainer (Ch. 528.56781)
42	58-344	Cup Washer (Ch. 528.56781)
43	70-314-0	Follower Spring (Ch. 528.56781)
44	22-29-4	Link Follower (Ch. 528.56780)
	22-30-4	Link Follower (Ch. 528.56781)
45	22-67-4	Drive Tension Lever(Ch. 528.56781)
46	83-1167	Motor Drive Belt (Ch. 528.56780)
	83-1168	Motor Drive Belt (Ch. 528.56781)
47	39-18-0	Speed Adaptor (Ch. 528.56780)
	39-19-0	Speed Adaptor (Ch. 528.56781)
49	58-348	"C" Washer (Ch. 528.56780)
	58-345	"C" Washer (Ch. 528.56781)
50	58-347	Fiber Washer (Ch. 528.56781)
51	39-13-0	Drive Wheel (Ch. 528.56780)
	39-14-0	Drive Wheel (Ch. 528.56781)
53	70-315-0	Drive Tension Spring(Ch. 528.56780)
	70-316-0	Drive Tension Spring(Ch. 528.56781)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-9054	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56780)
	37-8-3	Motor Mounting Grommet (Ch. 528.56781)
115	59-97	Motor (Ch. 528.56780)
	59-98	Motor (Ch. 528.56781)
117	70-320-0	Index Spring (Ch. 528.56781)
123	70-294-0	Clutch Spring

T Chassis Nos. 528.56804 & 528.56805

Ref. No.	Part No.	Description
1	84-7454	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge
39	62-88-0	Turntable Boot
42	58-344	Cup Washer (Ch. 528.56805)
43	70-314-0	Follower Spring (Ch. 528.56805)
44	22-30-4	Link Follower (Ch. 528.56805
45	22-67-4	Drive Tension Lever (Ch. 528.56805)
46	83-1168	Motor Drive Belt (Ch. 528.56805)
47	39-19-0	Speed Adaptor (Ch. 528.56805)
50	58-347	Fiber Washer (Ch. 528.56805)
51	39-52-0	Drive Wheel (Ch. 528.56805)
53	70-316-0	Drive Tension Spring(Ch. 528.56805)
54	21-110-1	Hold Down Arm Housing
65	84-6552	On/Off Switch
66	70-247-0	On/Off Switch Spring
73	84-6697	Main Slide
74	70-341-0	Positioning Slide Spring
88	70-371-0	Retainer Spring
93	84-7725	Lever and Stud Assembly
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-7680	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56805)
115	59-158	Motor (Ch. 528.56805)
117	70-320-0	Index Spring (Ch. 528.56805)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

U Chassis Nos. 528.56806 and 528.56807

Ref. No.	Part No.	Description
1	84-7454	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge
39	62-88-0	Turntable Boot
42	58-344	Cup Washer (Ch. 528.56807)
43	70-314-0	Follower Spring (Ch. 528.56807)
44	22-30-4	Link Follower (Ch. 528.56807)
45	22-67-4	Drive Tension Lever(Ch. 528.56807)
46	83-1168	Motor Drive Belt (Ch. 528.56807)
47	39-19-0	Speed Adaptor (Ch. 528.56807)
50	58-347	Fiber Washer (Ch. 528.56807)
51	39-52-0	Drive Wheel (Ch. 528.56807)
53	70-316-0	Drive Tension Spring(Ch. 528.56807)
54	21-110-1	Hold Down Arm Housing
65	84-6552	On/Off Switch
66	70-247-0	On/Off Switch Spring
73	84-6697	Main Slide
74	70-341-0	Positioning Slide Spring
88	70-371-0	Retainer Spring
93	84-7725	Lever and Stud Assembly
97	57-407169	Screw, T.C. #4-24 x 7/16"
114	37-54-3	Motor Mounting Grommet (Ch. 528.56807)
115	70-158	Motor (Ch. 528.56807)
117	70-320-0	Index Spring (Ch. 528.56807)

V Chassis Nos. 528.56824 and 528.56825

Ref. No.	Part No.	Description
1	84-7643	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
42	58-344	Cup Washer (Ch. 528.56825)
43	70-314-0	Follower Spring (Ch. 528.56825)
44	22-30-4	Link Follower (Ch. 528.56825)
45	22-67-4	Drive Tension Lever(Ch. 528.56825)
46	83-1168	Motor Drive Belt (Ch. 528.56825)
47	39-19-0	Speed Adaptor (Ch. 528.56825)
50	58-347	Fiber Washer (Ch. 528.56825)
51	39-52-0	Drive Wheel (Ch. 528.56825)
53	70-316-0	Drive Tension Spring(Ch. 528.56825)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
97	57-407169	Screw, T.C. #4-24 x 7/16"
114	37-54-3	Motor Mounting Grommet (Ch. 528.56825)
115	39-163	Motor (Ch. 528.56824)
	59-159	Motor (Ch. 528.56825)
117	70-320-0	Index Spring (Ch. 528.56825)

W Chassis Nos. 528.56840 & 528.56841

Ref. No.	Part No.	Description
1	84-7647	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-319-0	Cartridge
39	62-88-0	Turntable Boot
40	84-6895	Turntable and Hub Assembly
41	86-348	"C" Washer (Ch. 528.56840)
	22-101-1	Hairpin Retainer (Ch. 528.56841)
42	86-343	Cup Washer (Ch. 528.56840)
	86-344	Cup Washer (Ch. 528.56841)
43	70-314-0	Follower Spring (Ch. 528.56841)
44	22-29-4	Link Follower (Ch. 528.56840)
	22-304	Link Follower (Ch. 528.56841)
45	22-67-4	Drive Tension Lever(Ch. 528.56841)
46	83-1167	Motor Drive Belt (Ch. 528.56840)
	83-1163	Motor Drive Belt (Ch. 528.56841)
47	39-18-0	Speed Adaptor (Ch. 528.56840)
	39-19-0	Speed Adaptor (Ch. 528.56841)
48	86-374	Felt Washer
49	86-348	"C" Washer (Ch. 528.56840)
	86-345	"C" Washer (Ch. 528.56841)
50	86-346	Fiber Washer (Ch. 528.56840)
	86-347	Fiber Washer (Ch. 528.56841)
51	39-13-0	Drive Wheel (Ch. 528.56840)
	39-14-0	Drive Wheel (Ch. 528.56841)
53	70-315-0	Drive Tension Spring(Ch. 528.56840)
	70-316-0	Drive Tension Spring(Ch. 528.56841)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
74	70-341-0	Positioning Slide Spring
88	70-371-0	Retainer Spring
93	84-7725	Lever and Stud Assembly
97	57-407169	Screw, T. C. #4-24 x 7/16"
99	84-7680	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56840)
	37-8-3	Motor Mounting Grommet (Ch. 528.56841)
115	59-72	Motor (Ch. 528.56840)
	59-89	Motor (Ch. 528.56841)
117	70-320-0	Index Spring (Ch. 528.56841)
118	39-23-3	Push Trip Rod
123	70-294-0	Clutch Spring

X Chassis Nos. 528.56860 & 528.56861

Ref. No.	Part No.	Description
1	84-7642	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-88-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
41	22-101-1	Hairpin Retainer (Ch. 528.56861)
42	58-344	Cup Washer (Ch. 528.56861)
43	70-314-0	Follower Spring (Ch. 528.56861)
44	22-29-4	Link Follower (Ch. 528.56860
	22-30-4	Link Follower (Ch. 528.56861)
45	22-67-4	Drive Tension Lever(Ch. 528.56861)
46	83-1167	Motor Drive Belt (Ch. 528.56860)
	83-1168	Motor Drive Belt (Ch. 528.56861)
47	39-18-0	Speed Adaptor (Ch. 528.56860)
	39-19-0	Speed Adaptor (Ch. 528.56861)
50	58-347	Fiber Washer (Ch. 528.56861)
51	39-13-0	Drive Wheel (Ch. 528.56860)
	39-14-0	Drive Wheel (Ch. 528.56861)
54	21-110-1	Hold Down Arm Housing
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
74	70-341-0	Positioning Slide Spring
88	70-371-0	Retainer Spring
93	84-7725	Lever and Stud Assembly
99	84-7722	Cam Assembly
114	37-7-3	Motor Mounting Grommet (Ch. 528.56860)
	37-8-3	Motor Mounting Grommet (Ch. 528.56861)
115	59-97	Motor (Ch. 528.56860)
	59-98	Motor (Ch. 528.56861)
117	70-320-0	Index Spring (Ch. 528.56861)
118	39-195-3	Push Trip Rod
123	70-294-0	Clutch Spring

Y Chassis Nos. 528.56862 & 528.56863

Ref. No.	Part No.	Description
1	84-7643	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
41	22-101-1	Hairpin Retainer (Ch. 528.56862)
42	58-344	Cup Washer (Ch. 528.56862)
43	70-314-0	Follower Spring (Ch. 528.56862)
44	22-30-4	Link Follower (Ch. 528.56862)
	22-29-4	Link Follower (Ch. 528.56863)
45	22-67-4	Drive Tension Lever(Ch. 528.56862)

MECHANICAL PARTS LIST (CON'T.)

Chassis Nos. 528.56862 & 528.56863 (Con't)

Ref. No.	Part No.	Description
46	83-1168	Motor Drive Belt (Ch. 528.56862)
	83-1167	Motor Drive Belt (Ch. 528.56863)
47	39-19-0	Speed Adaptor (Ch. 528.56862)
	39-18-0	Speed Adaptor (Ch. 528.56863)
50	58-347	Fiber Washer (Ch. 528.56862)
51	39-14-0	Drive Wheel (Ch. 528.56862)
	39-13-0	Drive Wheel (Ch. 528.56863)
53	70-316-0	Drive Tension Spring(Ch. 528.56862)
	70-315-0	Drive Tension Spring(Ch. 528.56863)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
97	57-407169	Screw, T.C. #3-24 x 7/16"
114	37-8-3	Motor Mounting Grommet (Ch. 528.56862)
	37-7-3	Motor Mounting Grommet (Ch. 528.56863)
115	59-98	Motor (Ch. 528.56862)
	59-97	Motor (Ch. 528.56863)
117	70-320-0	Index Spring (Ch. 528.56862)

Z — Chassis Nos. 528.56864 & 528.56865

Ref. No.	Part No.	Description
1	84-7643	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
42	58-344	Cup Washer (Ch. 528.56865)
43	70-314-0	Follower Spring (Ch. 528.56865)
44	22-30-4	Link Follower (Ch. 528.56865)
45	22-67-4	Drive Tension Lever(Ch. 528.56865)
46	83-1168	Motor Drive Belt (Ch. 528.56865)
47	39-19-0	Speed Adaptor (Ch. 528.56865)
50	58-347	Fiber Washer (Ch. 528.56865)
51	39-52-0	Drive Wheel (Ch. 528.56865)
53	70-316-0	Drive Tension Spring(Ch. 528.56865)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
97	57-407169	Screw, T.C. #4-24 x 7/16"
115	59-163	Motor (Ch. 528.56864)
	59-159	Motor (Ch. 528.56865)

AA — Chassis Nos. 528.56704 & 528.56705

Ref. No.	Part No.	Description
1	84-6891	Tone Arm Assembly
10	21-112-1	Selector Housing and Tone Arm Rest
20	33-311-0	Cartridge
39	62-88-0	Turntable Boot
42	58-344	Cup Washer (Ch. 528.56705)
43	70-314-0	Follower Spring (Ch. 528.56705)
44	22-30-4	Follower Link (Ch. 528.56705)
46	83-1168	Motor Drive Belt (Ch. 528.56705)
47	39-19-0	Speed Adaptor (Ch. 528.56705)
50	58-347	Fiber Washer (Ch. 528.56705)
51	39-52-0	Drive Wheel (Ch. 528.56705)
53	70-316-0	Drive Tension Spring(Ch. 528.56705)
54	21-110-1	Hold Down Arm Housing
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-7722	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56705)
115	59-158	Motor (Ch. 528.56705)
117	70-320-0	Index Spring (Ch. 528.56705)
123	70-294-0	Clutch Spring

BB — Chassis Nos. 528.57370 & 528.57371

Ref. No.	Part No.	Description
1	84-11861	Tone Arm Assembly
6	83-1305	Counter Balance Weight
13	52-1450-0	On/ Off-Reject Knob
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-11860	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-9045	Turntable and Hub Assembly
42	58-344	Cup Washer (Ch. 528. 57371)
43	70-314-0	Follower Spring (Ch. 528.57371)
44	22-30-4	Link Follower (Ch. 528.57371)
45	22-67-4	Drive Tension Lever(Ch. 528.57371)
46	83-1168	Motor Drive Belt (Ch. 528.57371)
47	39-19-0	Speed Adaptor (Ch. 528.57371)
50	58-347	Fiber Washer (Ch. 528.57371)
51	39-52-0	Drive Wheel (Ch. 528.57371)
53	70-316-0	Drive Tension Spring(Ch. 528.57371)
65	84-11850	On/ Off Switch
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide

Chassis Nos. 528.57370 & 528.57371 (Con't)

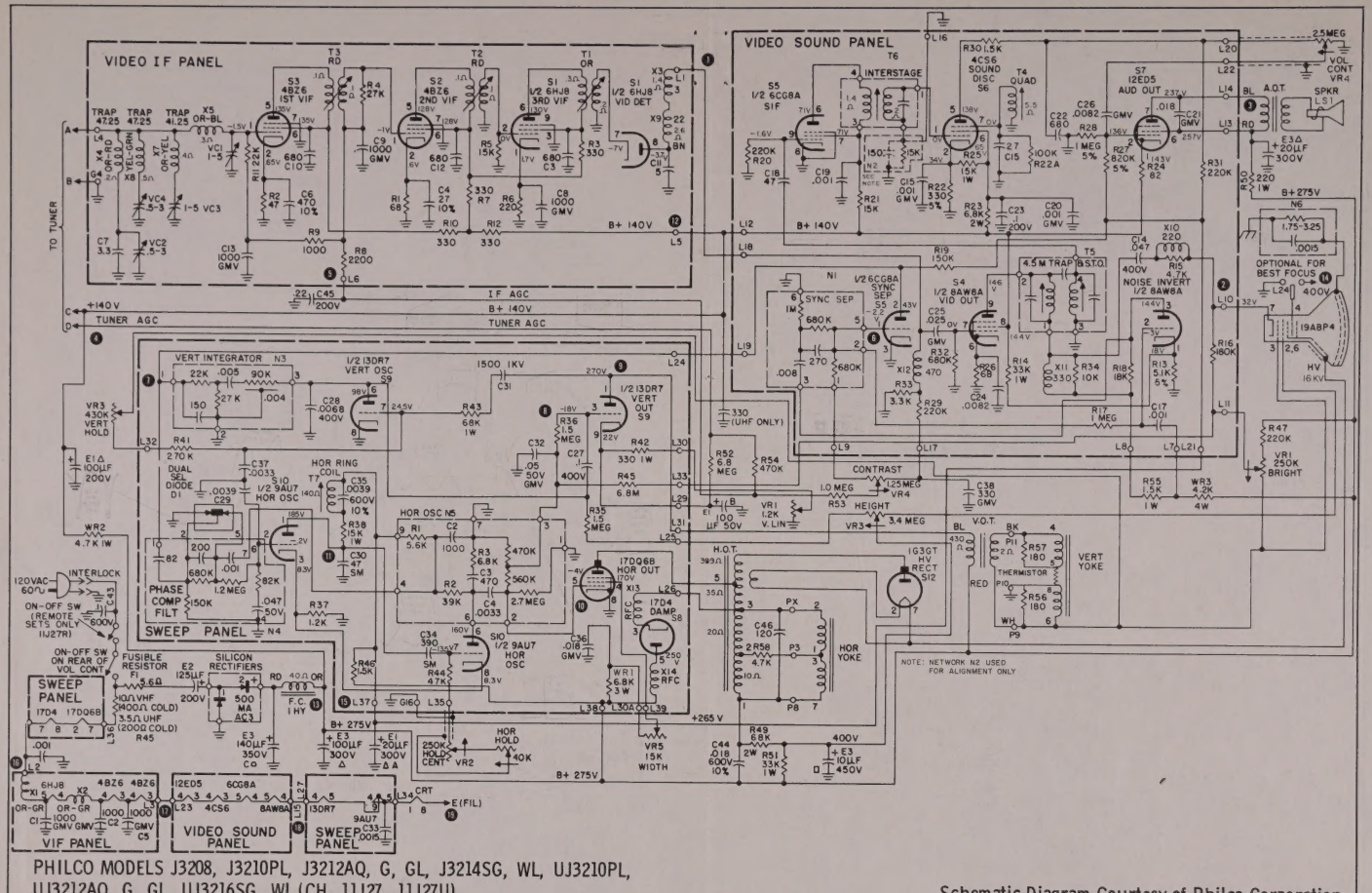
Ref. No.	Part No.	Description
114	37-54-3	Motor Mounting Grommet (Ch. 528.57371)
115	59-163	Motor (Ch. 528.57370)
	59-159	Motor (Ch. 528.57371)
117	70-320-0	Index Spring (Ch. 528.57371)

CC Chassis Nos. 528.57360 & 528.57361

Ref. No.	Part No.	Description
1	84-11861	Tone Arm Assembly
6	83-1305	Counter Balance Weight
13	52-1450-0	On/Off Reject Knob
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-11860	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-9045	Turntable and Hub Assembly
42	58-344	Cup Washer (Ch. 528.57361)
43	70-314-0	Follower Spring (Ch. 528.57361)
44	22-30-4	Link Follower (Ch. 528.57361)
45	22-67-4	Drive Tension Lever(Ch. 528.57361)
46	83-1168	Motor Drive Belt (Ch. 528.57361)
47	39-19-0	Speed Adaptor (Ch. 528.57361)
50	58-347	Fiber Washer (Ch. 528.57361)
51	39-52-0	Drive Wheel (Ch. 528.57361)
53	70-316-0	Drive Tension Spring(Ch. 528.57361)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
99	84-11977	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.57361)
115	59-163	Motor (Ch. 528.57360)
	59-159	Motor (Ch. 528.57361)
117	70-320-0	Index Spring (Ch. 528.57361)
118	39-279-3	Push Trip Rod

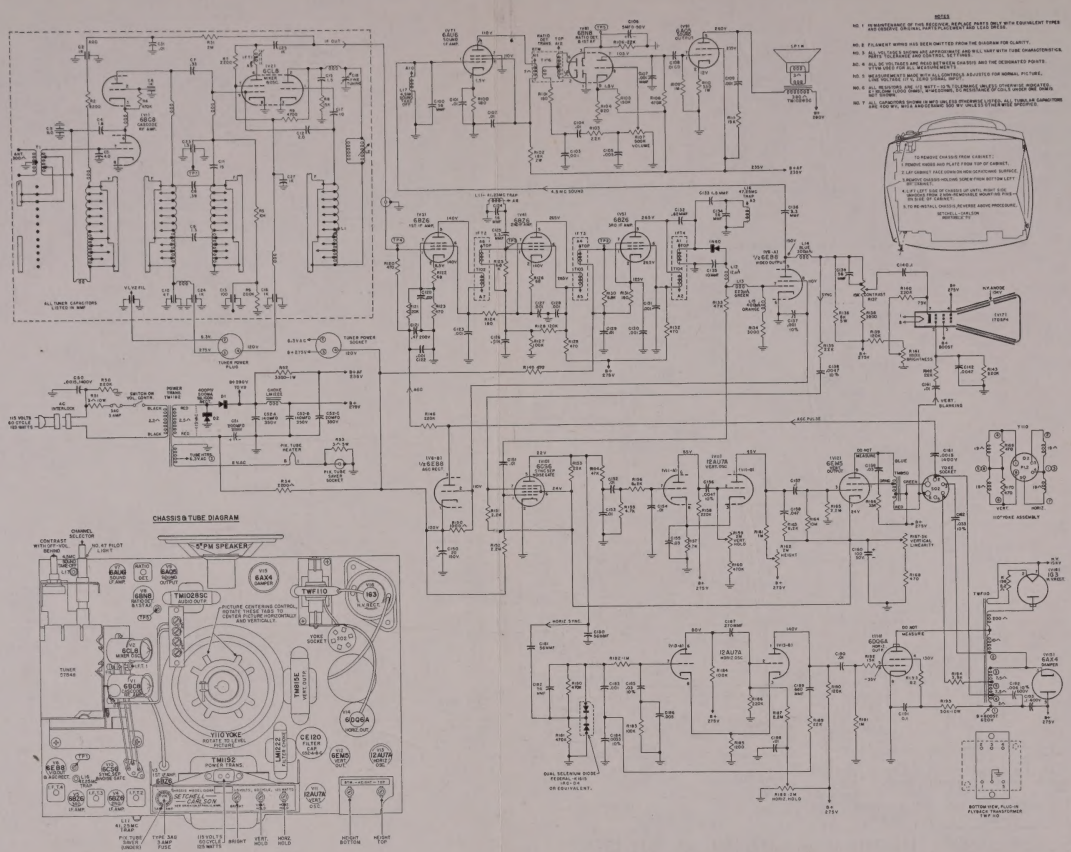
DD Chassis Nos. 528.56866 & 528.56867

Ref. No.	Part No.	Description
1	84-7643	Tone Arm Assembly
6	83-1305	Counter Balance Weight
10	21-94-1	Selector Housing and Tone Arm Rest
17	40-200-0	Speed Escutcheon
20	33-314-0	Cartridge
31	84-7640	Record Hold Down Arm
39	62-103-0	Turntable Boot
40	84-6932	Turntable and Hub Assembly
42	58-344	Cup Washer (Ch. 528.56867)
43	70-314-0	Follower Spring (Ch. 528.56867)
44	22-30-4	Link Follower (Ch. 528.56867)
45	22-67-4	Drive Tension Spring (Ch. 528.56867)
46	83-1168	Motor Drive Belt (Ch. 528.56867)
47	39-19-0	Speed Adaptor (Ch. 528.56867)
50	58-347	Fiber Washer (Ch. 528.56867)
51	39-52-0	Drive Wheel (Ch. 528.56867)
53	70-316-0	Drive Tension Spring(Ch. 528.56867)
68	84-7515	Tone Arm Actuating Lever
73	84-7844	Main Slide
97	57-407169	Screw, T.C. #4-24 x 7/16"
99	84-11977	Cam Assembly
114	37-54-3	Motor Mounting Grommet (Ch. 528.56867)
115	59-163	Motor (Ch. 528.56866)
	59-159	Motor (Ch. 528.56867)
117	70-320-0	Index Spring (Ch. 528.56867)
118	39-279-3	Push Trip Rod



PHILCO MODELS J3208, J3210PL, J3212AQ, G, GL, J3214SG, WL, UJ3210PL, UJ3212AQ, G, GL, UJ3216SG, WL (CH. 11J27, 11J27U)

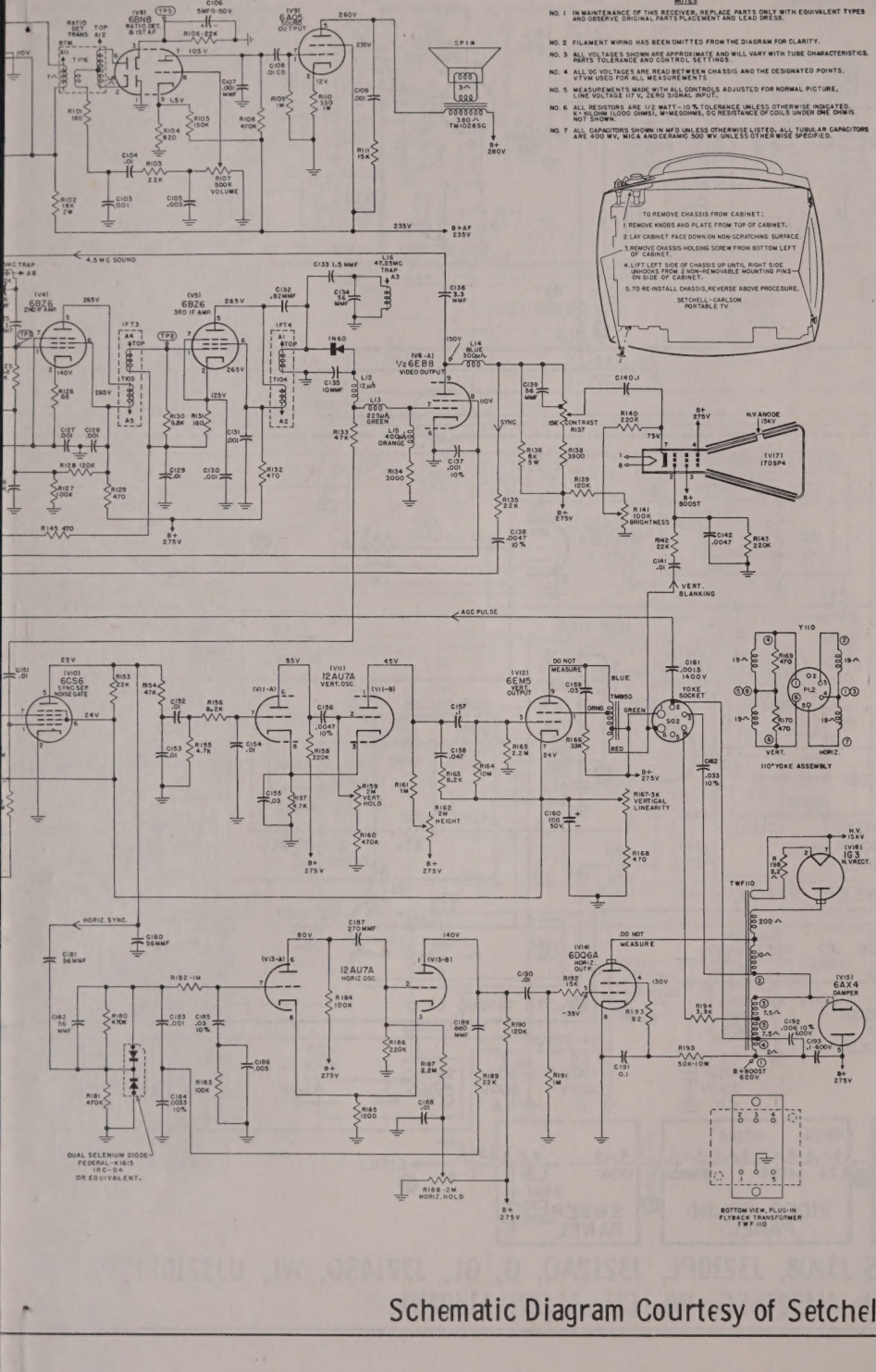
Schematic Diagram Courtesy of Philco Corporation


CHASSIS & TUBE DIAGRAM
5" PM SPEAKER
NOTES
TO REMOVE CHASSIS FROM CABINET:
1 REMOVE KNOBS AND PLATE FROM TOP OF CABINET.
2 LAY CABINET FACE DOWN ON NON-SCRATCHING SURFACE.
3 REMOVE CHASSIS-HOLDING SCREW FROM BOTTOM LEFT OF CHASSIS.
4 LIFT LEFT SIDE OF CHASSIS UP UNTIL RIGHT SIDE SWINGS OVER & RESTS ON REMOVABLE MOUNTING PIN. TO RE-INSTALL CHASSIS, REVERSE ABOVE PROCEDURE.
SETCHELL-CARLSON
(SECTIONAL 21")

SETCHELL-CARLSON MODEL P67 (CH. C106A)

Schematic Diagram Courtesy of Setchell-Carlson Inc.

©Howard W. Sams & Co., Inc. 1961 SET 515 FOLDER 17 –S


NOTES
NO. 1 IN MAINTENANCE OF THIS RECEIVER, REPLACE PARTS ONLY WITH EQUIVALENT TYPES AND OBSERVE ORIGINAL PARTS PLACEMENT AND LEAD DRESS.
NO. 2 FILAMENT WIRING HAS BEEN OMITTED FROM THE DIAGRAM FOR CLARITY.
NO. 3 ALL VOLTAGES SHOWN ARE APPROXIMATE AND WILL VARY WITH TUBE CHARACTERISTICS, PARTS TOLERANCE AND CONTROL SETTINGS.
NO. 4 ALL DC VOLTAGES ARE READ BETWEEN CHASSIS AND THE DESIGNATED POINTS. VTVM USED FOR ALL MEASUREMENTS
NO. 5 MEASUREMENTS MADE WITH ALL CONTROLS ADJUSTED FOR NORMAL PICTURE, LINE VOLTAGE 117 V, ZERO SIGNAL INPUT.
NO. 6 ALL RESISTORS ARE 1/2 WATT - 10 % TOLERANCE UNLESS OTHERWISE INDICATED. K = KILOHM (1,000 OHMS), M = MEGOHMS, DC RESISTANCE OF COILS UNDER ONE OHM IS NOT SHOWN.
NO. 7 ALL CAPACITORS SHOWN IN MFD UNLESS OTHERWISE LISTED. ALL TUBULAR CAPACITORS ARE 400 WV, MICA AND CERAMIC 500 WV UNLESS OTHERWISE SPECIFIED.
TO REMOVE CHASSIS FROM CABINET:
1. REMOVE KNOBS AND PLATE FROM TOP OF CABINET.
2. LAY CABINET FACE DOWN ON NON-SCRATCHING SURFACE.
3. REMOVE CHASSIS-HOLDING SCREW FROM BOTTOM LEFT OF CABINET.
4. LIFT LEFT SIDE OF CHASSIS UP UNTIL RIGHT SIDE UNHOOKS FROM 2 NON-REMOVABLE MOUNTING PINS ON SIDE OF CABINET.
5. TO RE-INSTALL CHASSIS, REVERSE ABOVE PROCEDURE.
SETCHELL-CARLSON PORTABLE TV
4.5 MC SOUND
VIDEO OUTPUT
VERT. OSC
VERT. OUTPUT
HORIZ. OSC
HORIZ. OUTP
DAMPER
CONTRAST
BRIGHTNESS
H.V. ANODE 13KV
VERT. BLANKING
AGC PULSE
YOKE SOCKET
110° YOKE ASSEMBLY
VERTICAL LINEARITY
VERT. HOLD
HEIGHT
HORIZ. HOLD
H.V. RECT.
DUAL SELENIUM DIODE FEDERAL-K1615 IRC-D4 OR EQUIVALENT.
BOTTOM VIEW, PLUG-IN FLYBACK TRANSFORMER TWF110

Schematic Diagram Courtesy of Setchell-Carlson Inc.